SITE 823 HOLE A CORE 1H CORED INTERVAL 0.0-5.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G N22 - N23	A/G CN15			N	74.0% 1.53	53.4%	1	0.5 1.0				
					N	73.7% 1.54		2					
					N	72.4% 1.57	67.8% 65.0%	3					
					N	73.0% 1.59	73.0%	4					
								CC					

LITHOLOGIC DESCRIPTION

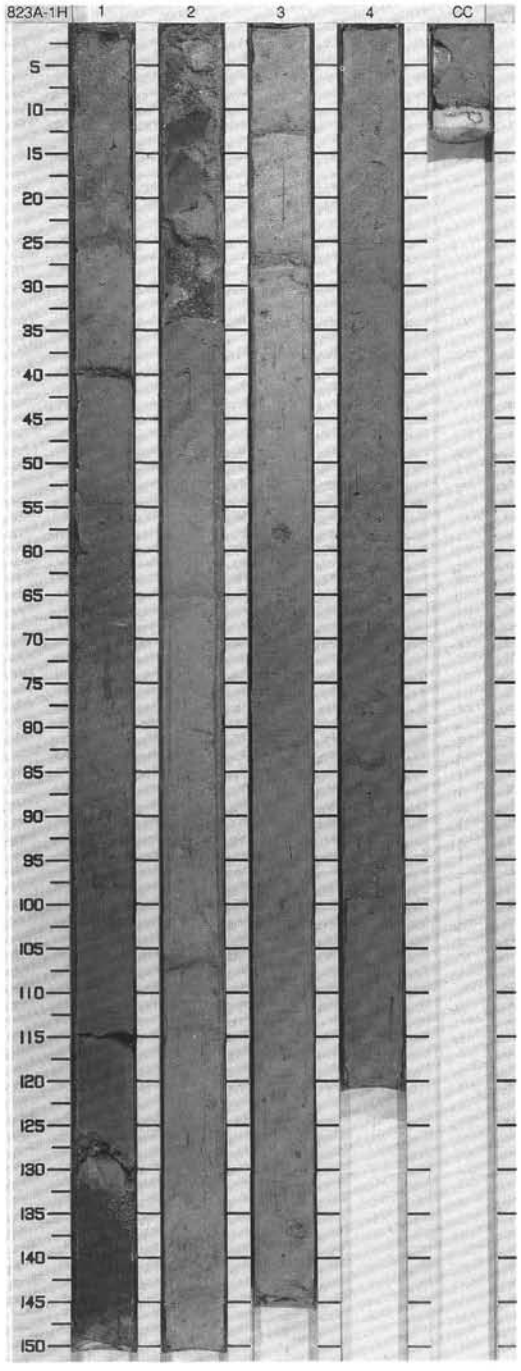
CLAY NANNOFOSSIL MIXED SEDIMENT with QUARTZ, BIOCLASTS, and MICRITE; NANNOFOSSIL OOZE with MICRITE and CLAY

Major lithology: The upper 110 cm consist of unlithified, pale yellow (2.5Y 7/3), gray (5Y 5/1), and light brownish gray (10YR 6/2), CLAY NANNOFOSSIL MIXED SEDIMENT with QUARTZ, BIOCLASTS and MICRITE. Sediments in Sections 2, 3, 4, and core catcher consist of gray (5Y 5/1) to light greenish gray (5GY7/1) NANNOFOSSIL OOZE with MICRITE and CLAY. Sediments in the entire core are moderately bioturbated and PTEROPOD tests and SPONGE SPICULES are scattered throughout the core.

Minor lithology: Unlithified, dark greenish gray (5GY4/1) LITHOCLASTIC RUDSTONE and FLOATSTONE with large boulder-sized mud clasts, gravel, and coarse to fine sand-sized clasts (QUARTZ, FELDSPAR, BIOTITE, FORAMINIFERS, VOLCANIC FRAGMENTS, and BIOCLASTS) between Section 1, 126 cm and Section 2, 35 cm. Several thin to medium (cm to <10 cm) beds of unlithified, gray (5Y 6/1), fine to medium sand-sized BIOCLASTIC *PACKSTONE*; allochems include PTEROPODS, OSTRACODS, *FORAMINIFERS*, *Halimeda* PLATES, ECHINOID SPINES and SPONGE SPICULES. Individual beds are characterized by a sharp basal boundary.

SMEAR SLIDE SUMMARY (%):

	1, 26 D	1, 50 D	1, 120 D	3, 41 D	4, 77 D	CF 4, 96 D
COMPOSITION:						
Accessory minerals	2	1	2	1	---	---
Bioclast	10	4	8	8	2	30
Calcite	8	7	5	7	10	---
Clay	3	12	30	10	9	---
Feldspar	2	1	1	2	1	---
Foraminifers	4	3	1	5	7	60
Micrite	10	10	10	10	38	---
Nannofossils	37	43	28	40	25	---
Quartz	12	6	7	6	5	10
Spicules	7	10	5	7	3	---
Tunicate	5	3	2	3	---	---



SITE 823 HOLE A CORE 2H CORED INTERVAL 5.8-15.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN15			N	67.0% 1.63	62.4%	1	0.5 1.0				
		N22 - N23			N	68.2% 1.60		2					*
					N	71.6% 1.58	53.8%	3					
					N	70.1% 1.63		4					*
					N	70.8% 1.60	48.6% 52.3%	5					*
					N	69.3% 1.61		6				LW	
	A/G				N			7					
								CC				PAL	

LITHOLOGIC DESCRIPTION

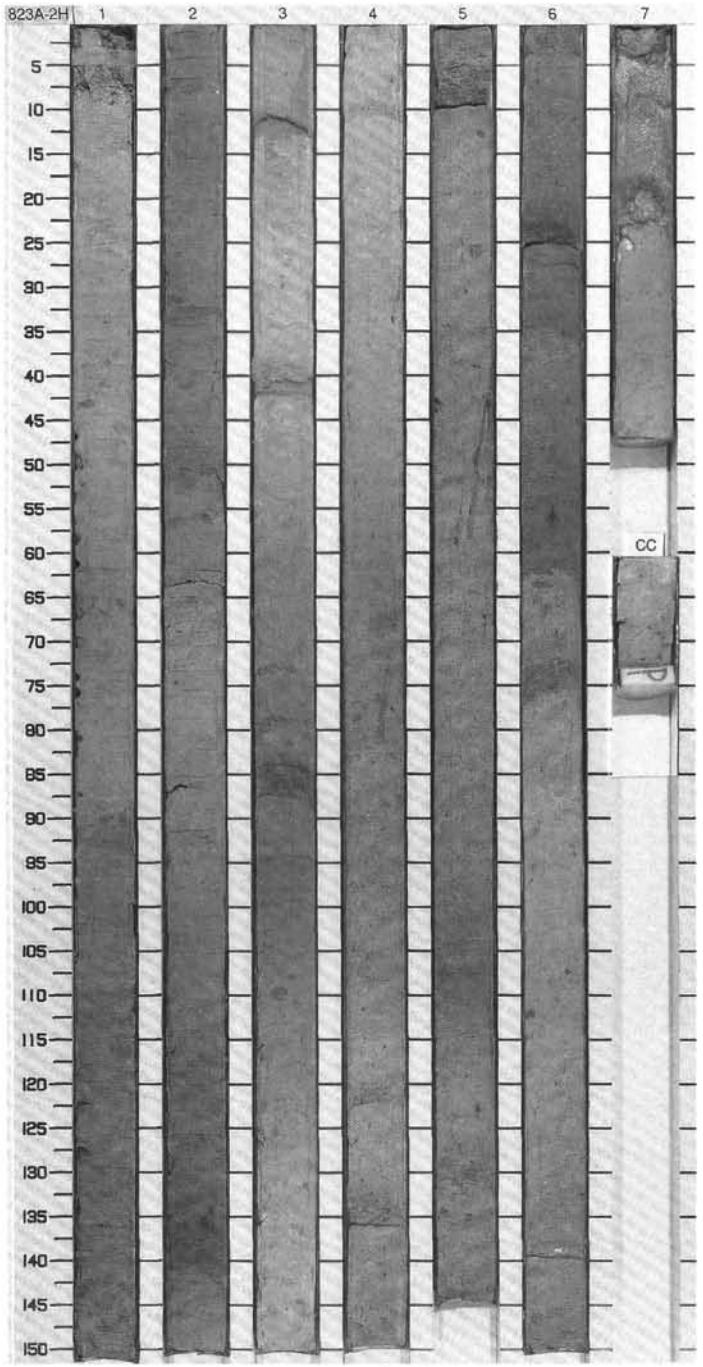
CLAYEY NANNOFOSSIL MIXED SEDIMENT with MICRITE, FORAMINIFERS and BIOCLASTS.

Major Lithology: Light gray (5Y 7/1), gray (5Y 6/1 and 5Y 5/1), light olive gray (5Y 6/2), and olive gray (5Y 5/2 and 5Y 4/2), bioturbated. CLAYEY NANNOFOSSIL MIXED SEDIMENT with MICRITE, FORAMINIFERS and BIOCLASTS.

Minor Lithology: Several (on average two per section) thin (cm) interbeds of gray (5Y 6/1), fine grained, unlithified, BIOCLASTIC PACKSTONE consisting of FORAMINIFERS, PTEROPODS, CORAL FRAGMENTS, BIVALVES, TUNICATE SPICULES and QUARTZ. Some layers display sharp basal contacts and normal grading.

SMEAR SLIDE SUMMARY (%):

	2, 21 D	3, 145 D	5, 80 D	CF 7, 16 D
COMPOSITION:				
Accessory minerals	---	---	---	1
Bioclast	10	6	12	75
Calcite	2	12	4	---
Clay	15	5	12	---
Feldspar	---	---	---	1
Foraminifers	10	4	5	8
Micrite	25	20	25	---
Nannofossils	25	40	25	---
Quartz	3	4	5	12
Spicules	9	5	3	3
Tunicate	---	2	4	---



SITE 823 HOLE A CORE 3H CORED INTERVAL 15.3-24.8 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N22 - N23; NANNOFOSSILS A/G CN15; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N

PHYS. PROPERTIES: N 65.2% 1.71; N 62.2% 1.74; N 60.5% 1.79; N 63.4% 1.76; N 63.2% 1.73; N 62.7% 1.70

CHEMISTRY: 69.1% 64.4%; 69.6%; 68.1%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG LW PAL

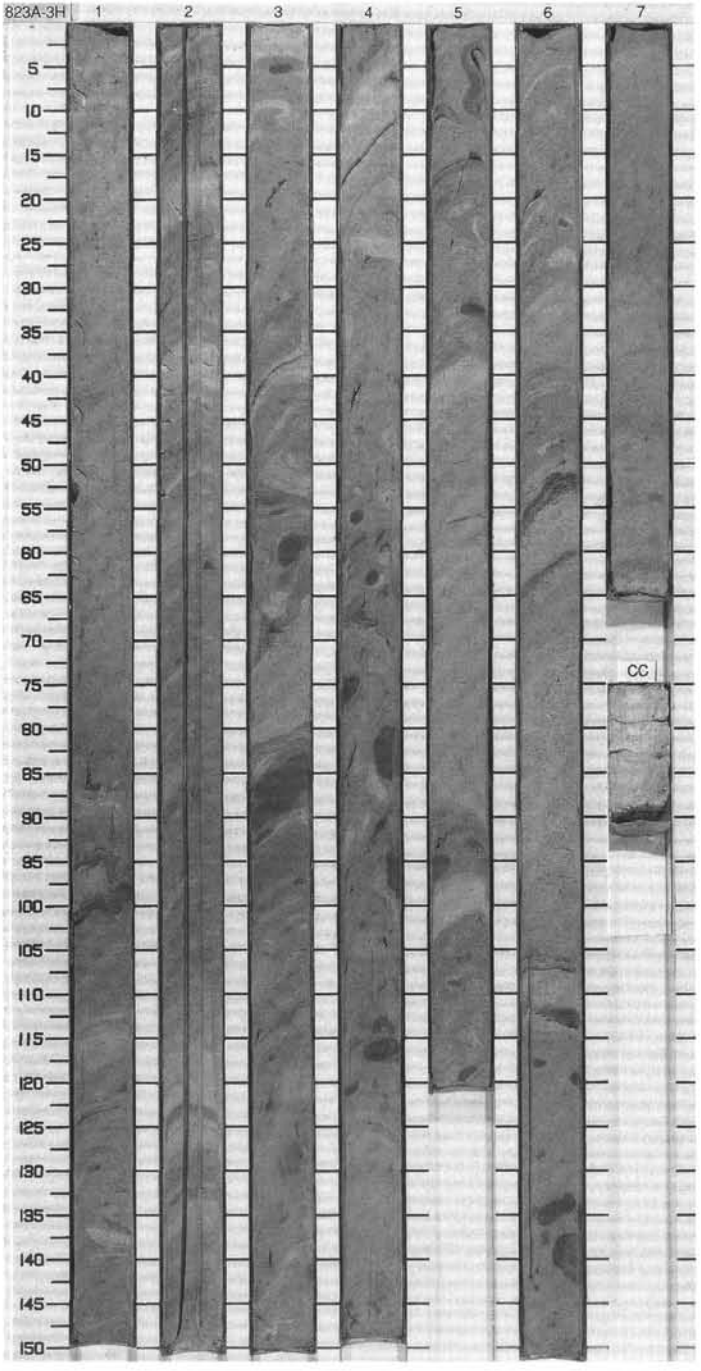
LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL OOZE with BIOCLASTS, FORAMINIFERS, and MICRITE; LITHOCLASTIC FLOATSTONES.

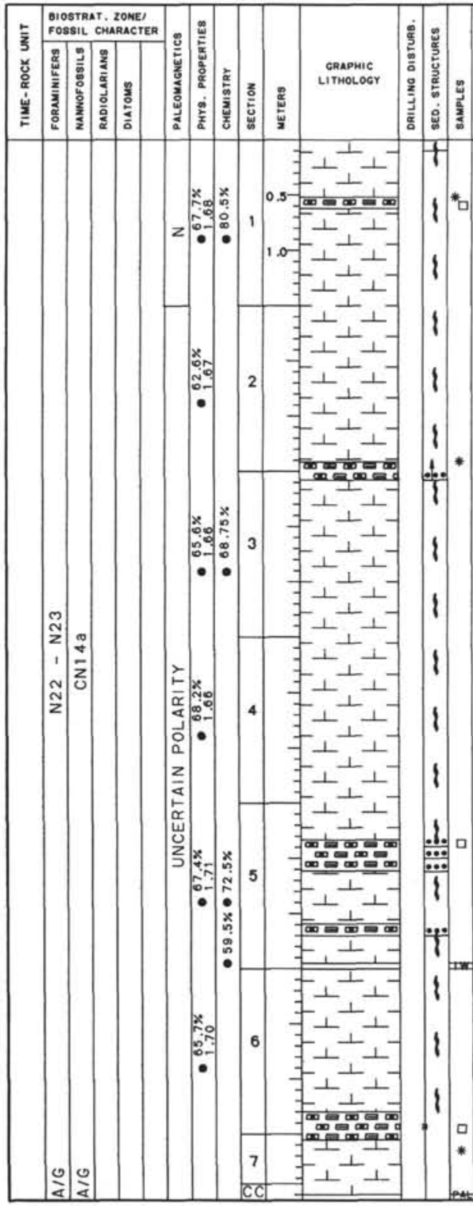
Major Lithology: Unlithified, light gray (5Y 7/1) to gray (5Y 6/1), moderately bioturbated CLAYEY NANNOFOSSIL OOZE with BIOCLASTS, FORAMINIFERS, and MICRITE interbedded with homogeneous LITHOCLASTIC (mud clasts) FLOATSTONE, usually firm, laminated to planar or slightly to strongly contorted. Mud clasts, up to 10 cm in diameter, are usually darker than the matrix, a dark greenish gray (5GY 4/1) to greenish gray (5GY 6/1).

SMEAR SLIDE SUMMARY (%):

	1, 30 D	3, 17 D	3, 76 D	5, 34 D	6, 80 D	7, 2 D
COMPOSITION:						
Bioclast	20	15	15	20	6	20
Foraminifers	5	5	15	3	20	5
Micrite	---	10	12	---	---	---
Nannofossils	67	60	50	62	62	65
Needles	5	5	5	5	5	5
Quartz	3	5	3	8	3	3
Spicules	Tr	---	---	---	---	---
Tunicate	Tr	Tr	Tr	2	Tr	2



SITE 823 HOLE A CORE 4H CORED INTERVAL 24.8-34.3 mbsf



LITHOLOGIC DESCRIPTION

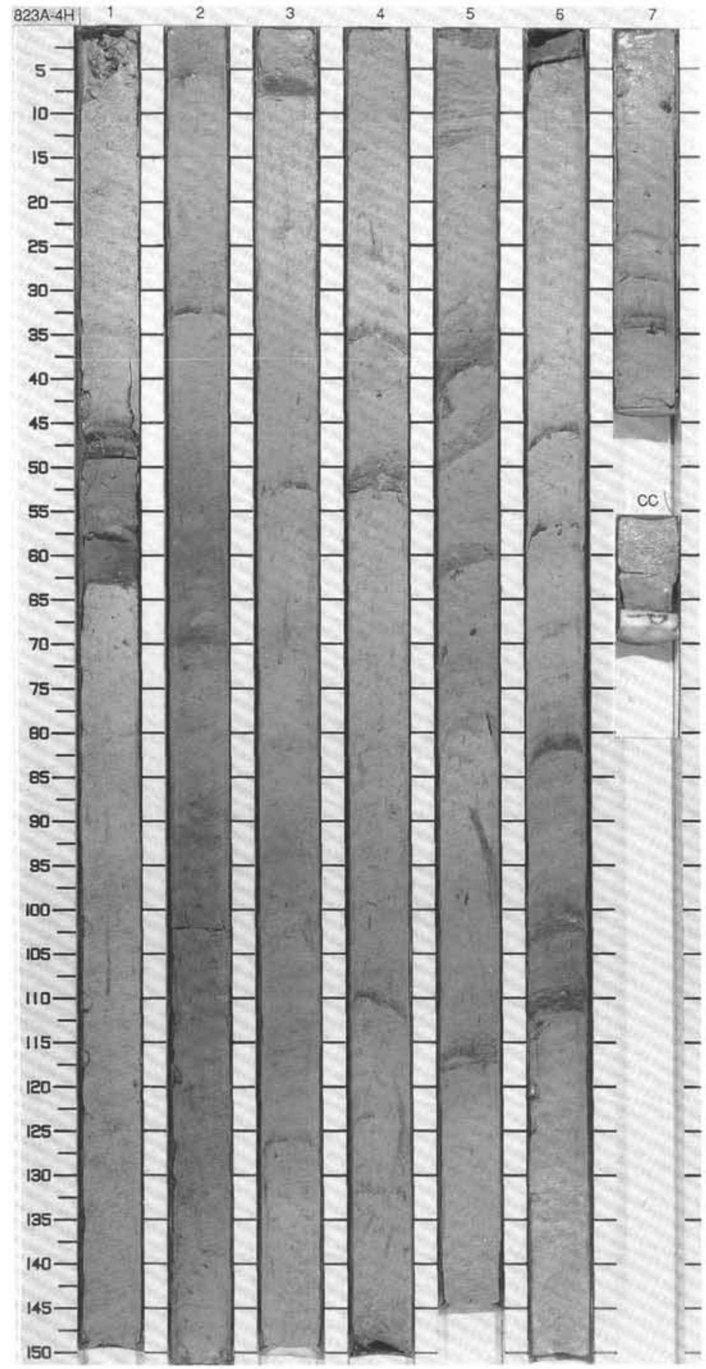
NANNOFOSSIL OOZE with BIOCLASTS, QUARTZ and CLAY.

Major lithologies: Unlithified but firm, white (10YR 7/1, 5Y 8/1), light gray (5Y 6/1), greenish gray 5GY 6/1), and gray (5Y6/2), homogeneous to bioturbated, NANNOFOSSIL OOZE with BIOCLASTS, QUARTZ and CLAY.

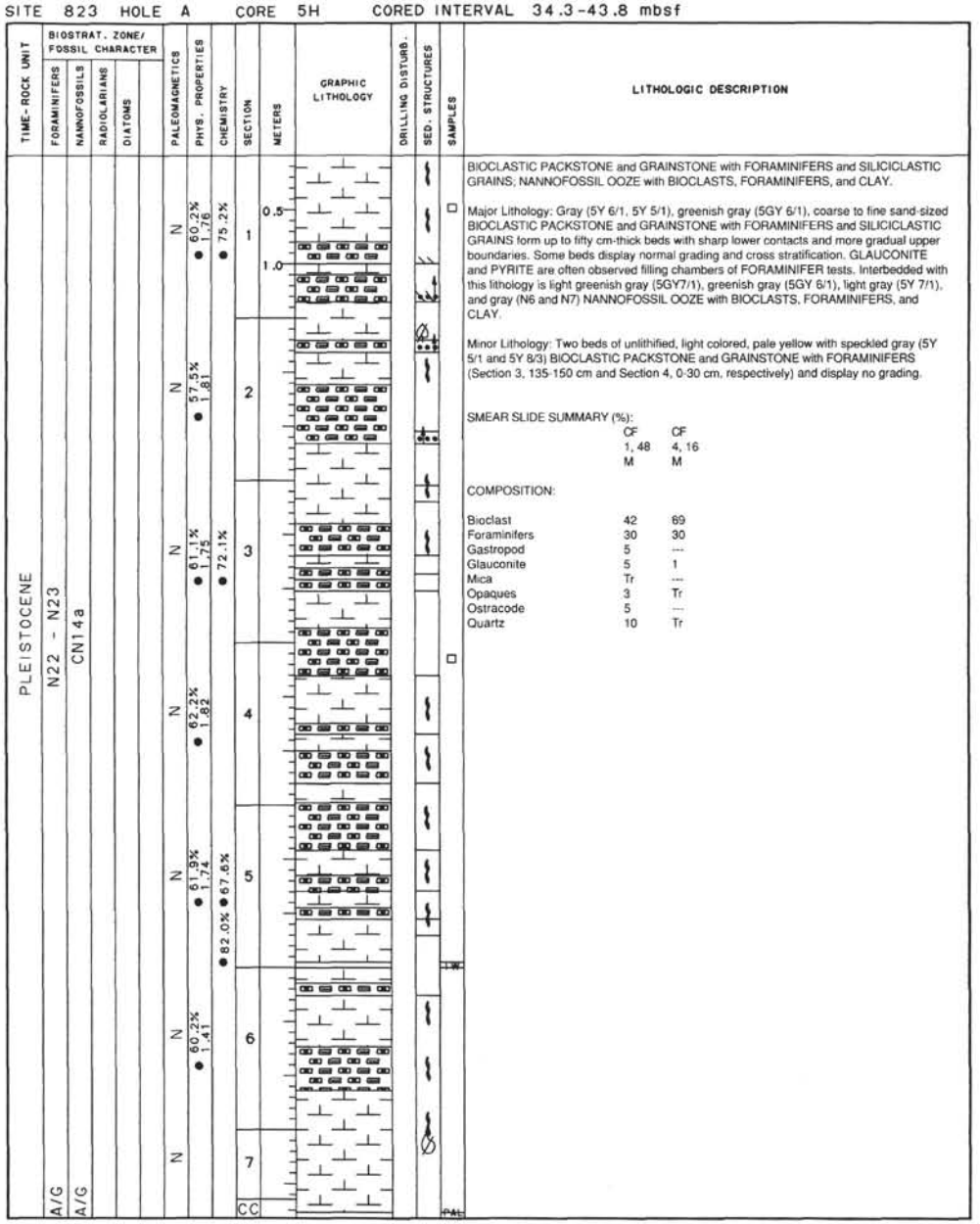
Minor lithology: Several thin to medium interbeds (on average four per section; a few cm-to 10 cm-thick) of unlithified, gray (5Y 6/1), silt-to medium sand-sized BIOCLASTIC PACKSTONE with FORAMINIFERS and QUARTZ. Some interbeds have a sharp basal boundary and normal grading. In contrast, a 20 cm-thick, light gray (N 6) BIOCLASTIC PACKSTONE from 132-150 cm in Section 6 lacking quartz grains, shows no obvious grading.

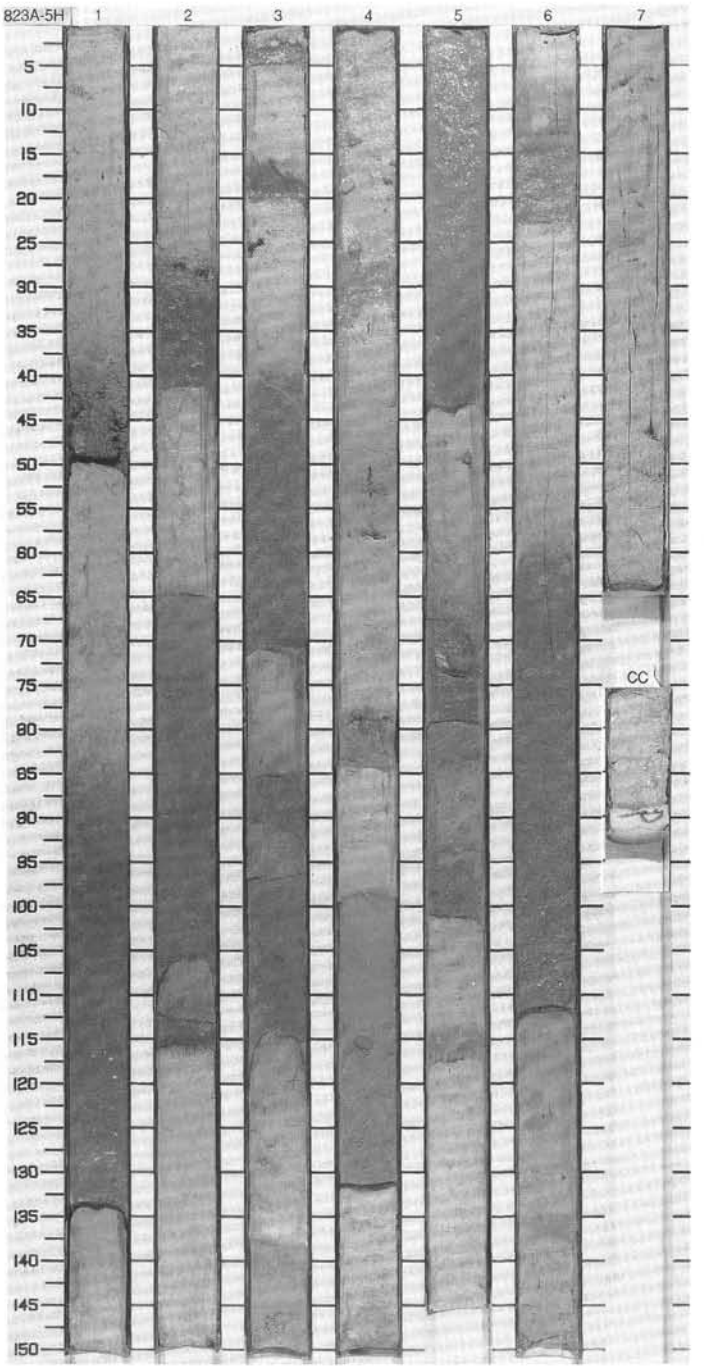
SMEAR SLIDE SUMMARY (%):

	1, 51 D	CF 1, 60 M	2, 140 D	CF 5, 38 M	CF 6, 147 M	7, 19 D
COMPOSITION:						
Bioclast	15	75	10	65	70	15
Foraminifers	2	15	5	20	30	10
Micrite	13	---	---	---	---	---
Nannofossils	60	---	77	---	---	60
Needles	---	---	---	---	---	3
Opaques	---	---	---	5	Tr	---
Quartz	2	10	3	10	Tr	10
Siliceous sponge spicules	---	---	---	Tr	---	---
Spicules	5	---	5	---	---	---
Tunicate	3	---	Tr	---	---	2



SITE 823 HOLE A CORE 5H CORED INTERVAL 34.3-43.8 mbsf





SITE 823 HOLE A CORE 6H CORED INTERVAL 43.8-53.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	A/G			N	62.4% 1.74	75.0%	1	0.5 1.0			*	
	N22 - N23	CN14a			N	62.6% 1.75		2					□
					N	63.7% 1.72	66.3%	3					
					N	53.0% 1.78		4					
					N	55.6% 1.87	63.5% 61.6%	5					OG
					N	54.9% 1.87		6				*	□
					N			7					
								CC					PAL

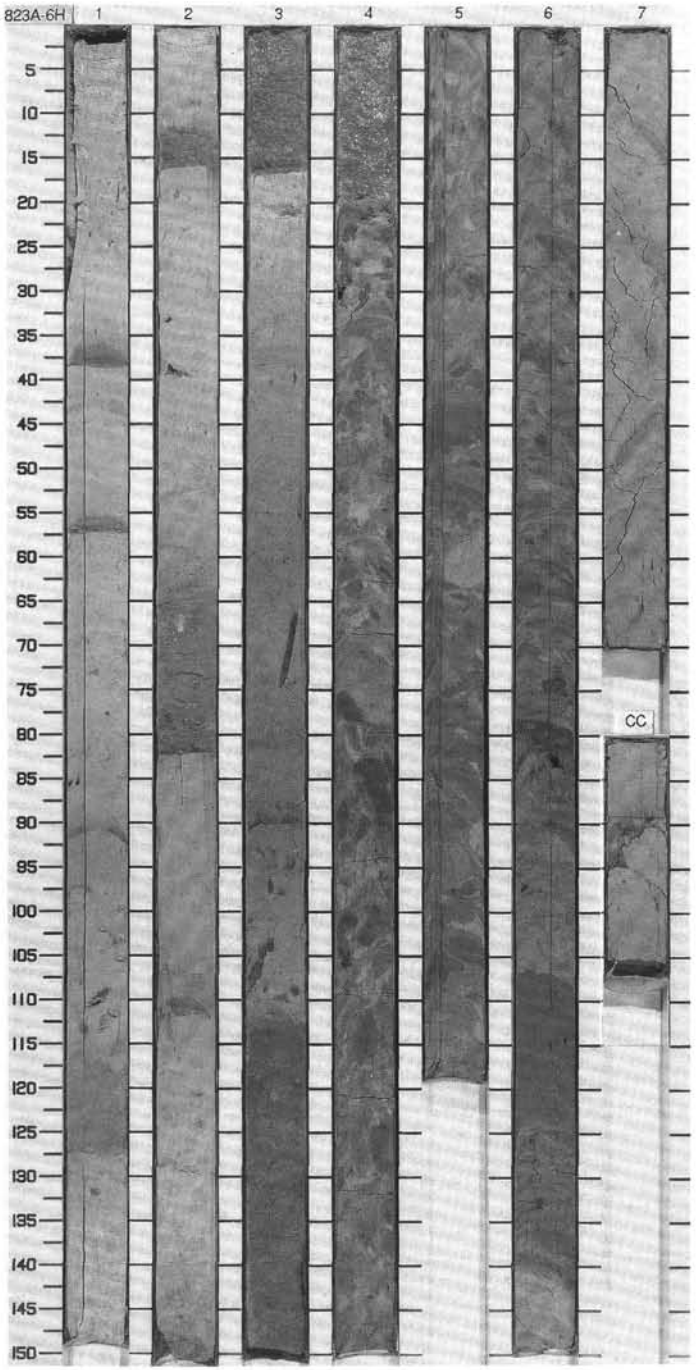
LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with FORAMINIFERS and CLAY; BIOCLASTIC PACKSTONE with FORAMINIFERS and QUARTZ; LITHOCLASTIC FLOATSTONE and RUDSTONE.

Major Lithology: In the upper three sections, gray (N7, N6) and greenish gray (5GY 5/1), unlithified but firm, NANNOFOSSIL OOZE with FORAMINIFERS and CLAY. This is interbedded with thin (a few cm) to thick (55 cm) silt- to medium sand-sized BIOCLASTIC PACKSTONE with FORAMINIFERS and QUARTZ (on average four beds per section). In most of Sections 4, 5 and 6, multi-colored mud clasts (usually ranging between dark greenish gray and light greenish gray - 5GY 4/1 to 5GY 7/1) form LITHOCLASTIC FLOATSTONE and RUDSTONE beds, with no preferred fabric; the matrix is a light greenish gray (5GY 7/1) NANNOFOSSIL OOZE with CLAY. Mud clasts range from 5 cm to <1 cm in diameter.

SMEAR SLIDE SUMMARY (%):

	1, 77 D	CF 2, 80 D	6, 116 D	CF 6, 126 D
COMPOSITION:				
Bioclast	10	55	20	70
Clay	---	---	10	Tr
Foraminifers	4	25	3	20
Glauconite	---	Tr	---	Tr
Micrite	---	---	20	---
Nannofossils	80	---	37	---
Needles	3	---	---	---
Opaques	---	Tr	---	Tr
Quartz	Tr	20	10	10
Spicules	---	---	Tr	---
Tunicate	3	---	Tr	---



SITE 823 HOLE A CORE 7H CORED INTERVAL 53.3-62.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	A/G			N	N 56.3% 1.84	52.5%	1	0.5 / 1.0	VOID			
	N22 - N23	CN14a			N	N 53.9% 1.86		2					
					N	N 55.9% 1.87	75.8%	3					
					N	N 55.7% 1.97		4					* □
					N	N 53.0% 1.90	77.4% 65.6%	5					
					N	N 52.0% 1.81		6					*
					N			7					
								CC					PAL

LITHOLOGIC DESCRIPTION

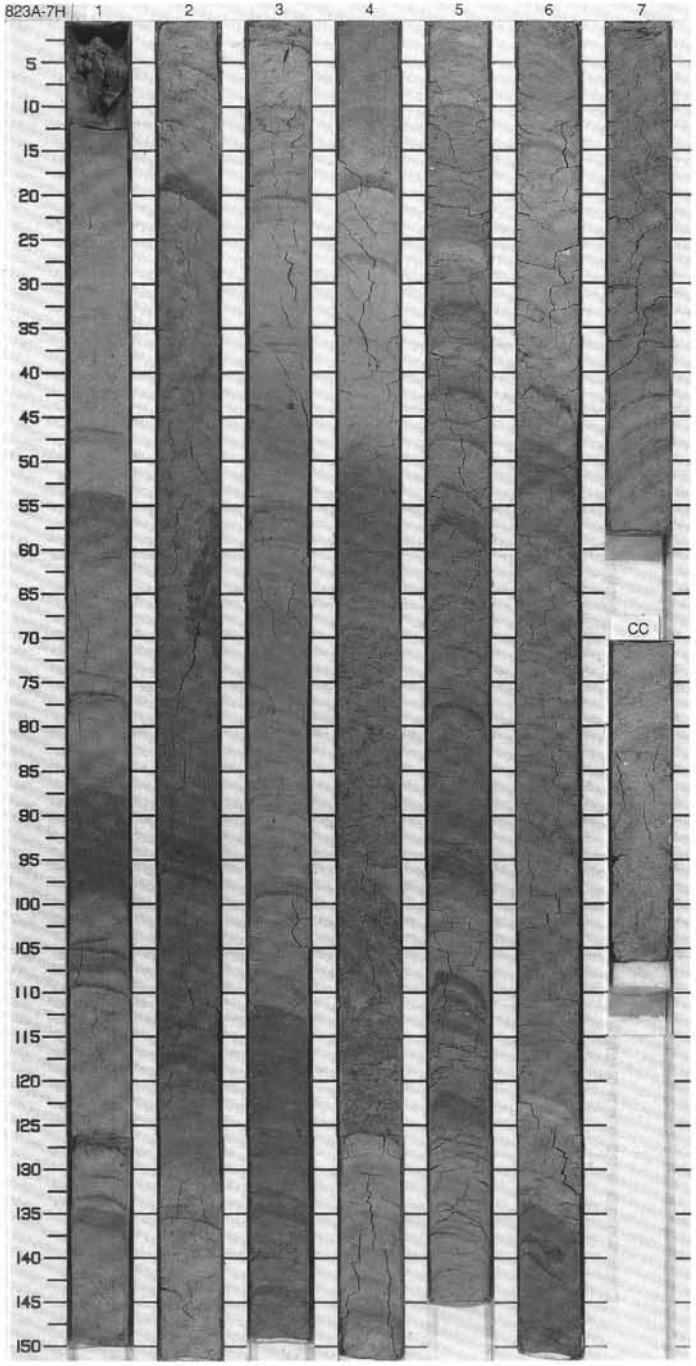
CLAYEY NANNOFOSSIL OOZE to MIXED SEDIMENT with BIOCLASTS and CLAY

Major Lithology: Finely interlaminated and bedded (bed thickness ranging from mm to 30-40 cm), dark gray to gray (5Y 4/1 to 5Y 6/1) and greenish gray (5GY 6/1), NANNOFOSSIL OOZE with BIOCLASTS and CLAY, CLAYEY NANNOFOSSIL OOZE with BIOCLASTS, and CLAYEY NANNOFOSSIL MIXED SEDIMENT.

Minor Lithology: Few cm thick, greenish gray (5GY 5/1) interbeds of BIOCLASTIC PACKSTONE with FORAMINIFERS and QUARTZ.

SMEAR SLIDE SUMMARY (%):

	4, 58 D	CF 4, 82 D	6, 90 D
COMPOSITION:			
Bioclast	30	68	30
Clay	30	---	25
Foraminifers	5	30	4
Glauconite	---	2	---
Nannofossils	30	---	36
Opaques	---	Tr	---
Quartz	5	Tr	5
Spicules	Tr	---	Tr



SITE 823 HOLE A CORE 8H CORED INTERVAL 62.8-72.3 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER
- FORAMINIFERS: A/G — N22 - N23
- NANNOFOSSILS: A/G — CN14a
- RADIOLARIANS
- DIATOMS

PALEOMAGNETICS: N N N N N N N

PHYS. PROPERTIES: ● 52.3% 1.93 ● 51.1% 1.95 ● 65.6% ● 74.8% ● 49.7% 1.95 ● 56.2% 1.86 ● 79.1% ● 50.3% 1.95 ● 76.9% ● 51.2% 1.96

CHEMISTRY

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: * □ LW PAL

LITHOLOGIC DESCRIPTION

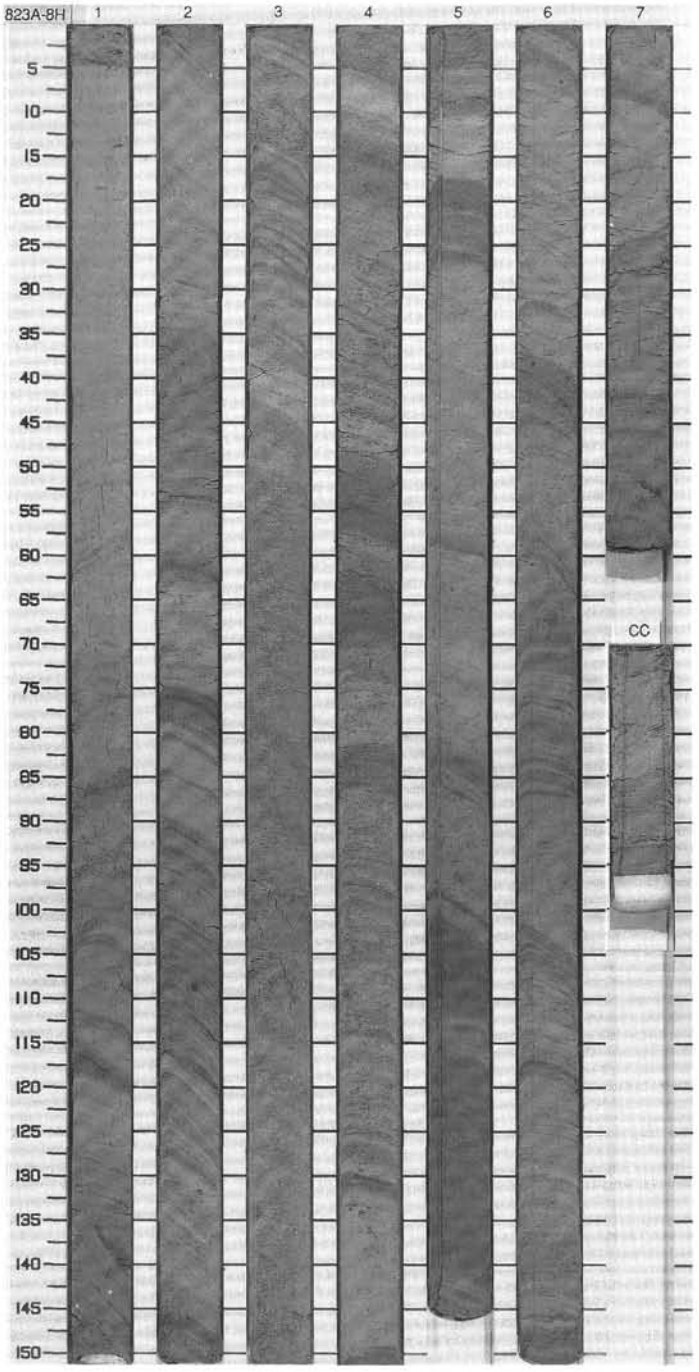
NANNOFOSSIL OOZE with CLAY; CLAYEY NANNOFOSSIL OOZE

Major Lithology: Dark gray to gray (5Y 4/1 to 5Y 6/1) and greenish gray to dark greenish gray (5GY 6/1 to 5GY 4/1) NANNOFOSSIL OOZE with CLAY interbedded with CLAYEY NANNOFOSSIL OOZE. Much of the core contains very contorted, folded, and steeply dipping strata indicating soft sediment deformation.

Minor Lithology: Gray (5Y6/1), unlithified, fine to medium grained, homogeneous BIOCLASTIC PACKSTONE with FORAMINIFERS form a few interbeds in Sections 3-5.

SMEAR SLIDE SUMMARY (%):

	2, 106 D	CF 3, 88 D
COMPOSITION:		
Bioclast	8	78
Calcite	3	---
Clay	25	---
Foraminifers	2	20
Glauconite	---	2
Micrite	5	---
Nannofossils	48	---
Opaques	---	Tr
Quartz	5	Tr
Spicules	1	---
Tunicate	2	---



SITE 823 HOLE A CORE 9H CORED INTERVAL 72.3-81.8 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: N22 - N23 (A/G); NANNOFOSSILS: CN13b (A/G); RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N

PHYS. PROPERTIES: N 48.6% 1.98; N 51.1% 1.92; N 51.1% 1.93; N 48.0% 2.00; N 49.4% 1.96; N 51.7% 1.94

CHEMISTRY: 60.8%; 78.1%; 60.6%; 75.3%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG; IW; PAL

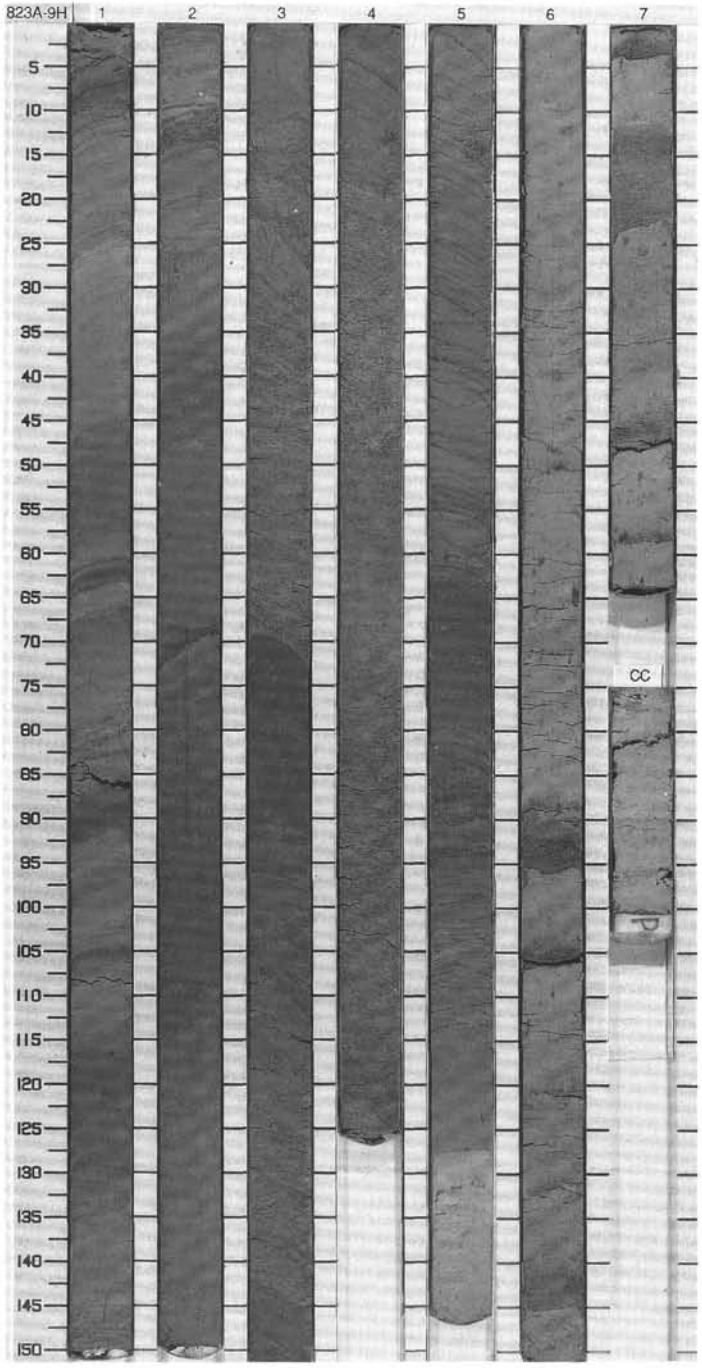
LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL OOZE with BIOCLASTS; BIOCLASTIC PACKSTONE

Major Lithology: Dark gray (5Y 4/1) and gray (5Y 5/1) CLAYEY NANNOFOSSIL OOZE with BIOCLASTS and light gray (5Y 7/1) NANNOFOSSIL OOZE with BIOCLASTS and CLAY. These lithologies comprise about 60% of the core, are unlithified, and laminated to homogeneous in the first five sections, with increased preservation of burrows in Sections 6, 7, and CC. Interbedded with this ooze is unlithified, greenish gray (5GY 6/1), silt- to medium sand-sized BIOCLASTIC PACKSTONE displaying rare normal grading, with beds being mm to several cm thick.

SMEAR SLIDE SUMMARY (%):

	1, 38 D	2, 123 D	CF 4, 123 D
COMPOSITION:			
Bioclast	20	20	60
Calcite	---	---	35
Clay	30	33	---
Foraminifers	---	2	5
Nannofossils	40	40	---
Quartz	5	5	---
Spicules	---	Tr	---
Tunicate	Tr	Tr	---



SITE 823 HOLE A CORE 10H CORED INTERVAL 81.8-91.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	A/G			N	N: 59.9% 1.77	56.5%	1	0.5 / 1.0				*
	N22 - N23	CN13b			N	N: 55.9% 1.78		2					
					N	N: 52.8% 1.88	53.6%	3					*
					N	N: 54.8% 1.84		4					*
					N	N: 55.7% 1.85	50.1% 24.7%	5					*
					N	N: 56.0% 1.87		6					SW
					N			7					
								CC					PAL

LITHOLOGIC DESCRIPTION

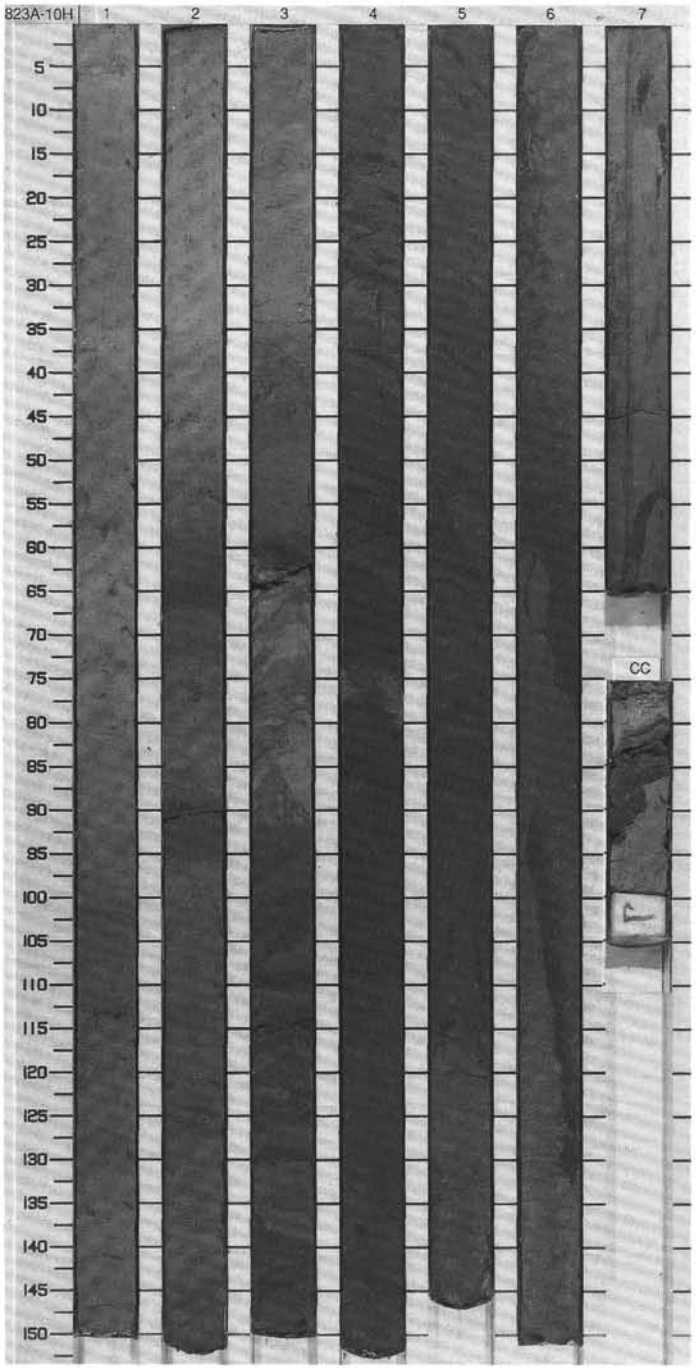
CLAYEY NANNOFOSSIL MIXED SEDIMENT; CLAYSTONE with NANNOFOSSILS

Major Lithology: In Sections 1, 2, and 0-55 cm in Section 3: unlithified but firm, light gray (5Y 7/1), greenish gray (5GY 6/1), to gray (5Y5/1) and dark gray (5Y4/1), CLAYEY NANNOFOSSIL MIXED SEDIMENT. Below this interval, the lithology grades into dark greenish gray (5GY 4/1) highly contorted and disturbed CLAYSTONE with NANNOFOSSILS.

Minor Lithology: Unlithified, gray (5Y 5/1), highly deformed and contorted, fine-grained, BIOCLASTIC PACKSTONE with FORAMINIFERS. These deformed sandy features may be sand injection structures which formed during soft sediment deformation of the section.

SMEAR SLIDE SUMMARY (%):

	1, 85 D	4, 70 D	5, 38 D
COMPOSITION:			
Accessory minerals	---	---	Tr
Bioclast	10	10	10
Clay	30	40	48
Foraminifers	Tr	Tr	---
Nannofossils	50	15	30
Quartz	3	35	12
Spicules	7	---	---
Tunicate	---	---	Tr



SITE 823 HOLE A CORE 11H CORED INTERVAL 91.3-100.8 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N22 - N23; NANNOFOSSILS A/G CN13b; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N

PHYS. PROPERTIES: N — ● 57.6% 1.78; ● 53.2% 1.84; ● 56.0% 1.83; ● 54.0% 1.84; ● 54.9% 1.91; ● 53.1% 1.79

CHEMISTRY: ● 60.4%; ● 40.2%; ● 45.4%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: IW; PAL

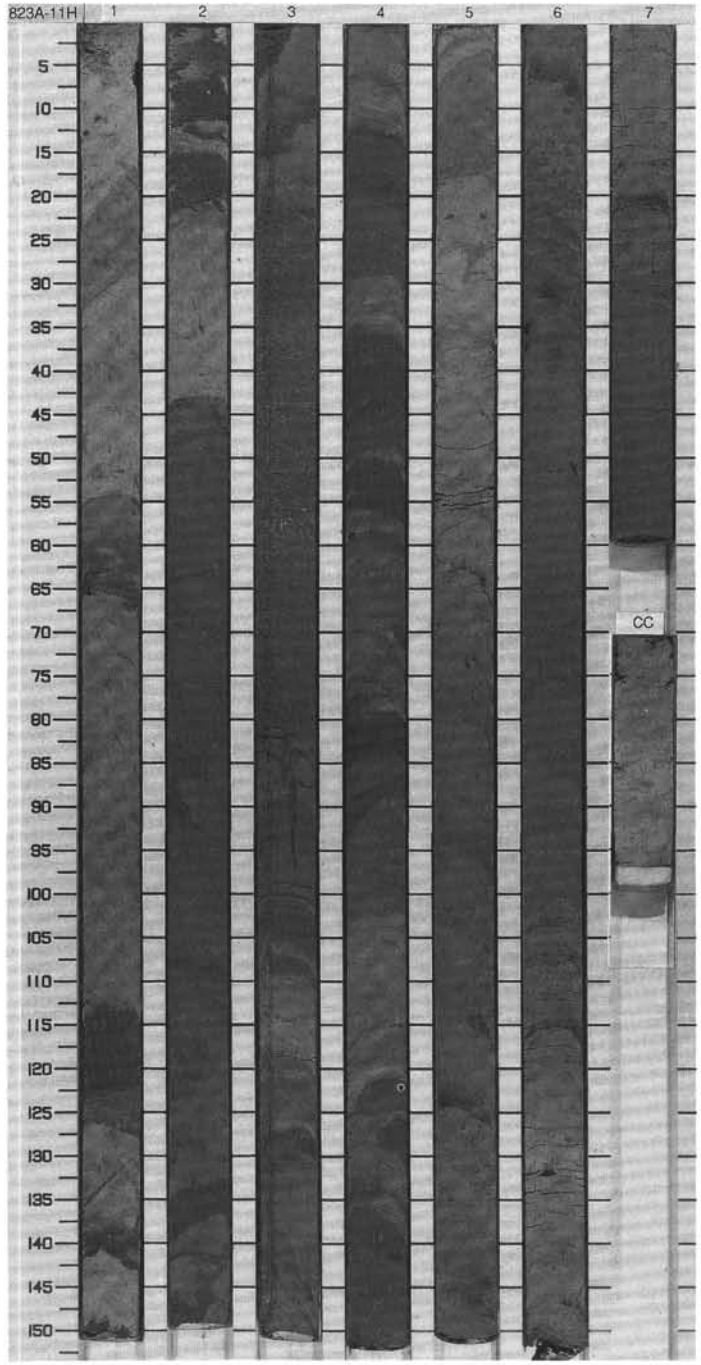
LITHOLOGIC DESCRIPTION

NANNOFOSSIL CLAYEY to CLAYEY NANNOFOSSIL MIXED SEDIMENT with MICRITE; BIOCLASTIC PACKSTONE with QUARTZ, MICRITE, FORAMINIFERS, and NANNOFOSSILS

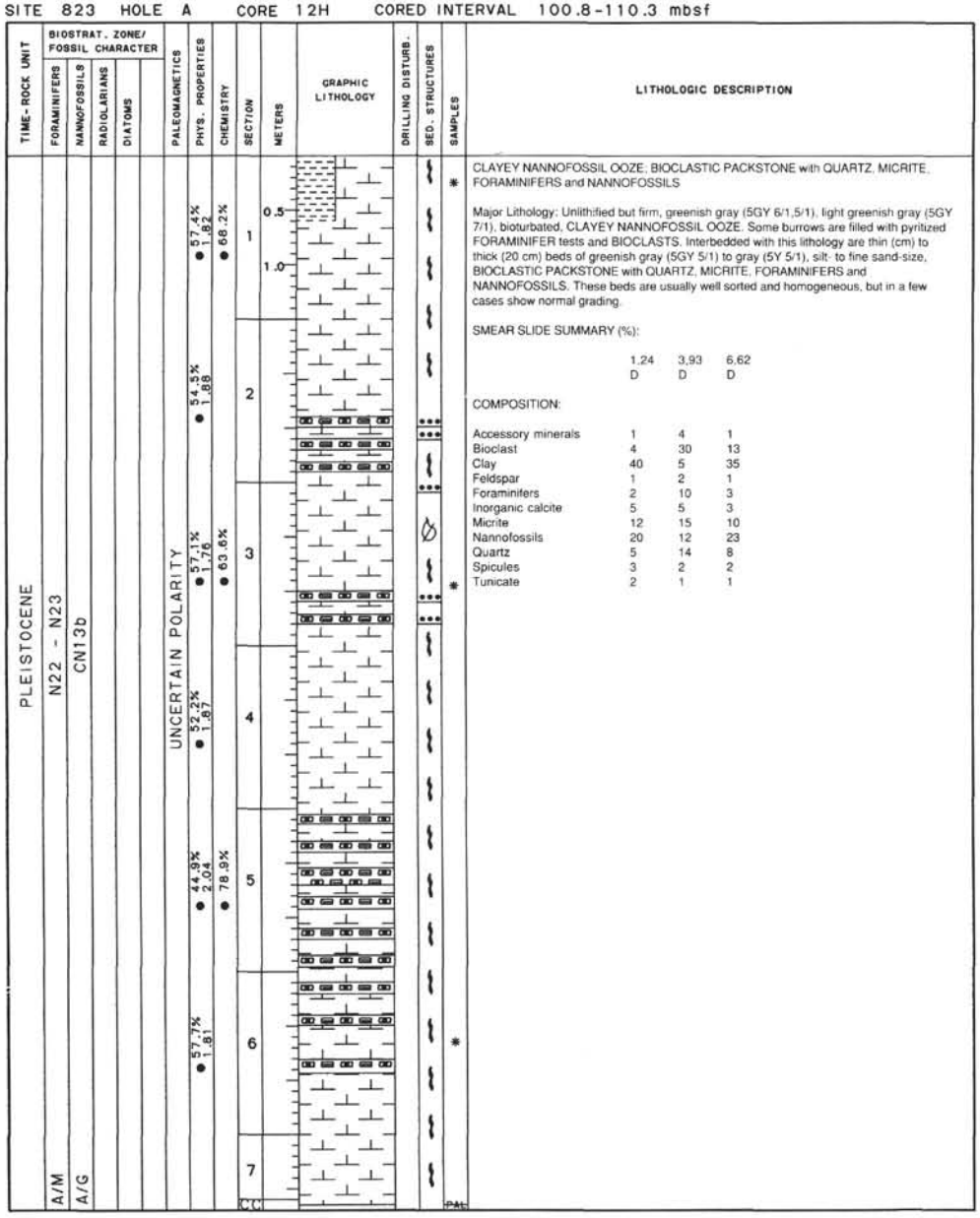
Major Lithology: Unlithified but firm, light gray (5Y 7/1), greenish gray (5GY 6/1 and 5/1), and (mostly in Section 4) dark greenish gray (5GY 4/1), slightly bioturbated, NANNOFOSSIL CLAYEY MIXED SEDIMENT with MICRITE. Unlithified, silt- to fine sand-sized BIOCLASTIC PACKSTONE with QUARTZ, MICRITE, FORAMINIFERS, and NANNOFOSSILS is present as interbeds, burrow fill sediment, and as contorted layers within the mixed sediment.

SMEAR SLIDE SUMMARY (%):

	1, 80 D	3, 45 D	6, 22 D
COMPOSITION:			
Accessory minerals	1	2	2
Bioclast	6	24	28
Calcite	5	6	7
Clay	20	5	3
Feldspar	1	2	2
Foraminifers	3	17	12
Micrite	15	10	15
Nannofossils	40	8	12
Quartz	4	12	13
Rock fragment	---	3	---
Spicules	3	6	4
Tunicate	2	---	2



SITE 823 HOLE A CORE 12H CORED INTERVAL 100.8-110.3 mbsf



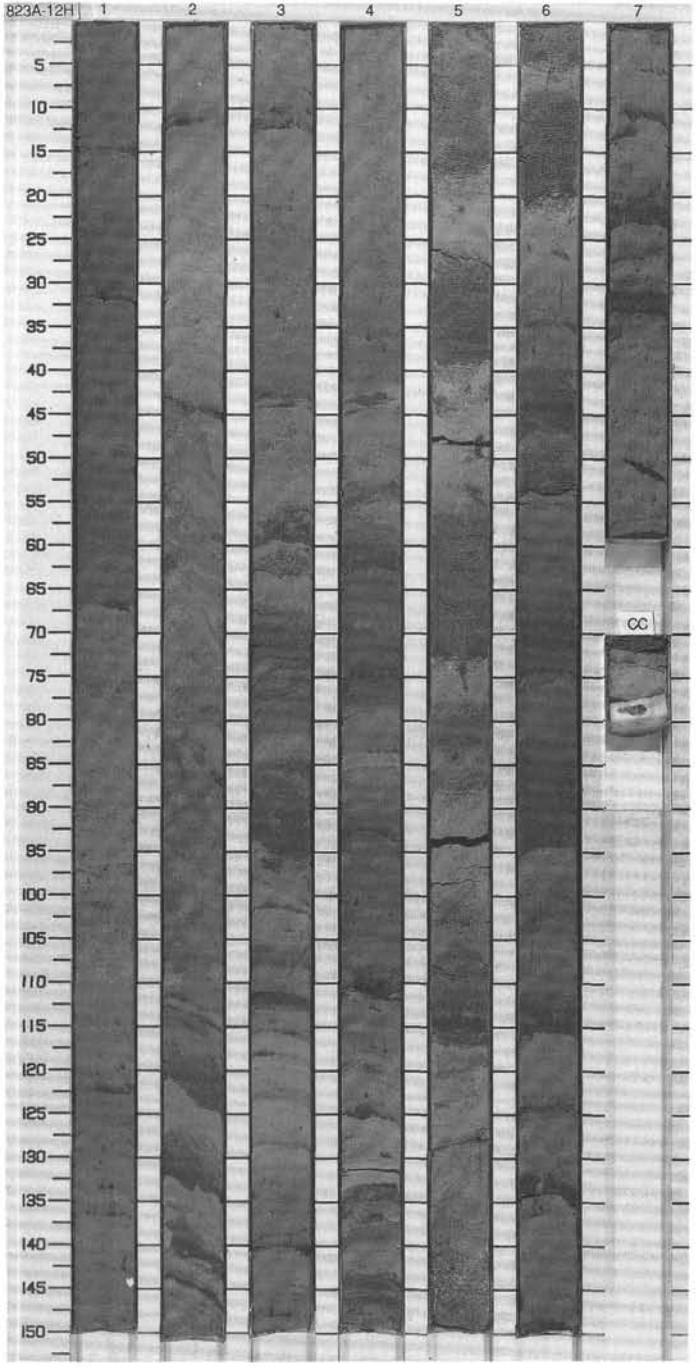
LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL OOZE; BIOCLASTIC PACKSTONE with QUARTZ, MICRITE, FORAMINIFERS and NANNOFOSSILS

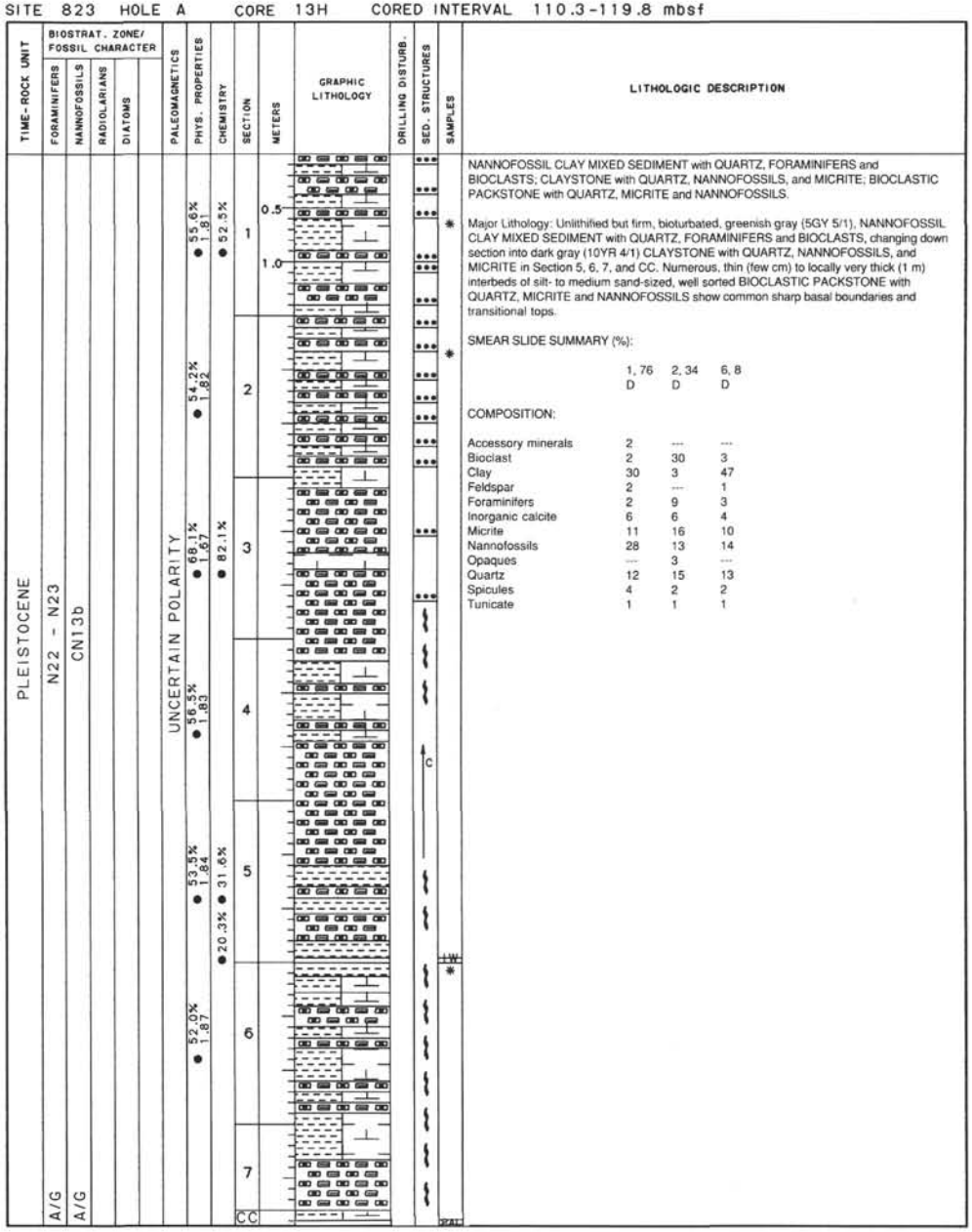
Major Lithology: Unlithified but firm, greenish gray (5GY 6/1,5/1), light greenish gray (5GY 7/1), bioturbated, CLAYEY NANNOFOSSIL OOZE. Some burrows are filled with pyritized FORAMINIFER tests and BIOCLASTS. Interbedded with this lithology are thin (cm) to thick (20 cm) beds of greenish gray (5GY 5/1) to gray (5Y 5/1), silt- to fine sand-size, BIOCLASTIC PACKSTONE with QUARTZ, MICRITE, FORAMINIFERS and NANNOFOSSILS. These beds are usually well sorted and homogeneous, but in a few cases show normal grading.

SMEAR SLIDE SUMMARY (%):

	1,24 D	3,93 D	6,62 D
COMPOSITION:			
Accessory minerals	1	4	1
Bioclast	4	30	13
Clay	40	5	35
Feldspar	1	2	1
Foraminifers	2	10	3
Inorganic calcite	5	5	3
Micrite	12	15	10
Nannofossils	20	12	23
Quartz	5	14	8
Spicules	3	2	2
Tunicate	2	1	1



SITE 823 HOLE A CORE 13H CORED INTERVAL 110.3-119.8 mbsf

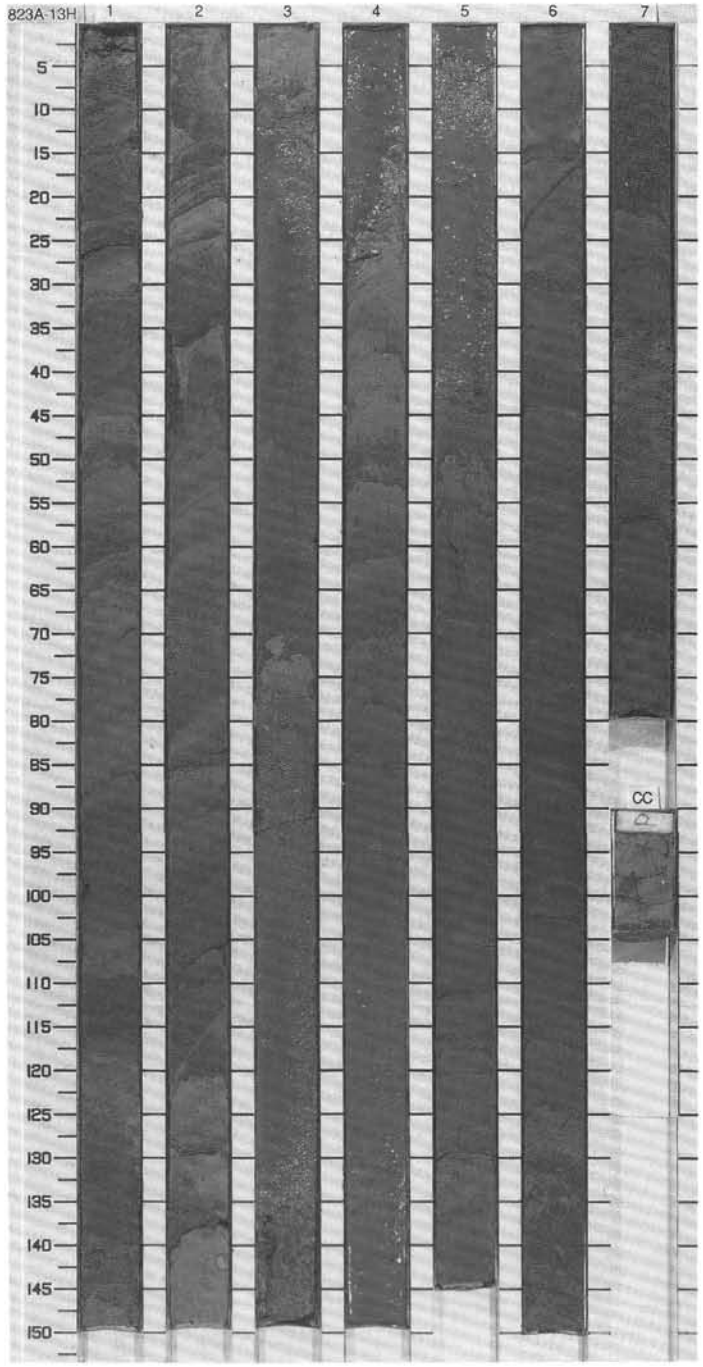


NANNOFOSSIL CLAY MIXED SEDIMENT with QUARTZ, FORAMINIFERS and BIOCLASTS; CLAYSTONE with QUARTZ, NANNOFOSSILS, and MICRITE; BIOCLASTIC PACKSTONE with QUARTZ, MICRITE and NANNOFOSSILS.

Major Lithology: Unlithified but firm, bioturbated, greenish gray (5GY 5/1), NANNOFOSSIL CLAY MIXED SEDIMENT with QUARTZ, FORAMINIFERS and BIOCLASTS, changing down section into dark gray (10YR 4/1) CLAYSTONE with QUARTZ, NANNOFOSSILS, and MICRITE in Section 5, 6, 7, and CC. Numerous, thin (few cm) to locally very thick (1 m) interbeds of silt- to medium sand-sized, well sorted BIOCLASTIC PACKSTONE with QUARTZ, MICRITE and NANNOFOSSILS show common sharp basal boundaries and transitional tops.

SMEAR SLIDE SUMMARY (%):

	1, 76 D	2, 34 D	6, 8 D
COMPOSITION:			
Accessory minerals	2	---	---
Bioclast	2	30	3
Clay	30	3	47
Feldspar	2	---	1
Foraminifers	2	9	3
Inorganic calcite	6	6	4
Micrite	11	16	10
Nannofossils	28	13	14
Opaques	---	3	---
Quartz	12	15	13
Spicules	4	2	2
Tunicate	1	1	1



SITE 823 HOLE B CORE 1H CORED INTERVAL 0.0-8.3 mbsf

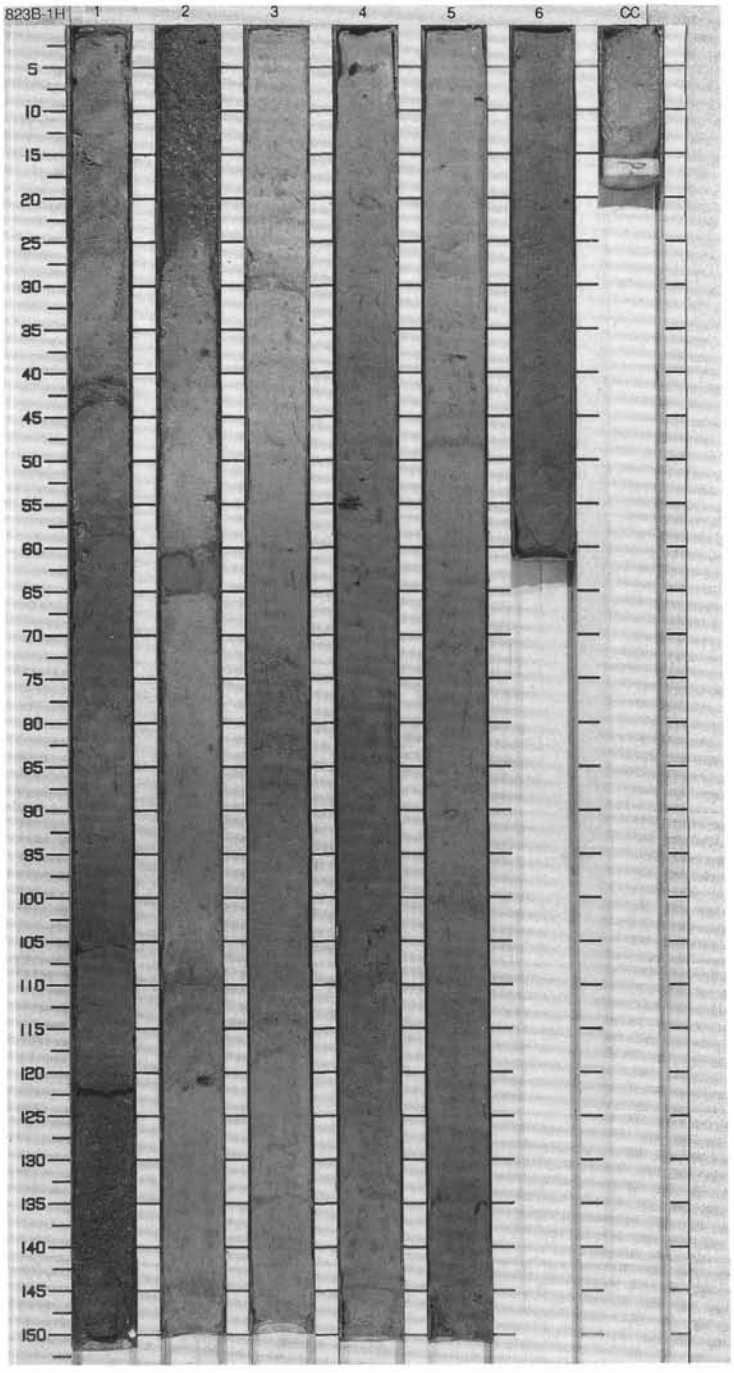
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE		CN15			N			1	0.5				
					N			1	1.0				
					N			2					
					N			3					
					N			4					
					N			5					
		A/G			N			6					
								CC					PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with CLAY, QUARTZ, and PTEROPODS; BIOCLASTIC PACKSTONE with QUARTZ

Major Lithology: Light gray to pale brown (5Y 7/1; 10YR 6/3) in Section 1, and greenish gray (5GY 7/1) for rest of core: NANNOFOSSIL OOZE with CLAY, QUARTZ, and PTEROPODS. Well bioturbated, some burrow fills contain BIOCLASTIC PACKSTONE (see below).

Minor Lithology: Light gray, pale brown, and olive gray (5Y 7/1; 10YR 6/3; 5Y 5/2) fine sand- to gravel-sized BIOCLASTIC PACKSTONE with QUARTZ. Allochems include *Halimeda*, PTEROPODS, CORALLINE ALGAE, CORALS and pyritic FORAMINIFERS. ROCK FRAGMENTS also occur.



SITE 823 HOLE B CORE 2H CORED INTERVAL 8.3-17.8 mbsf

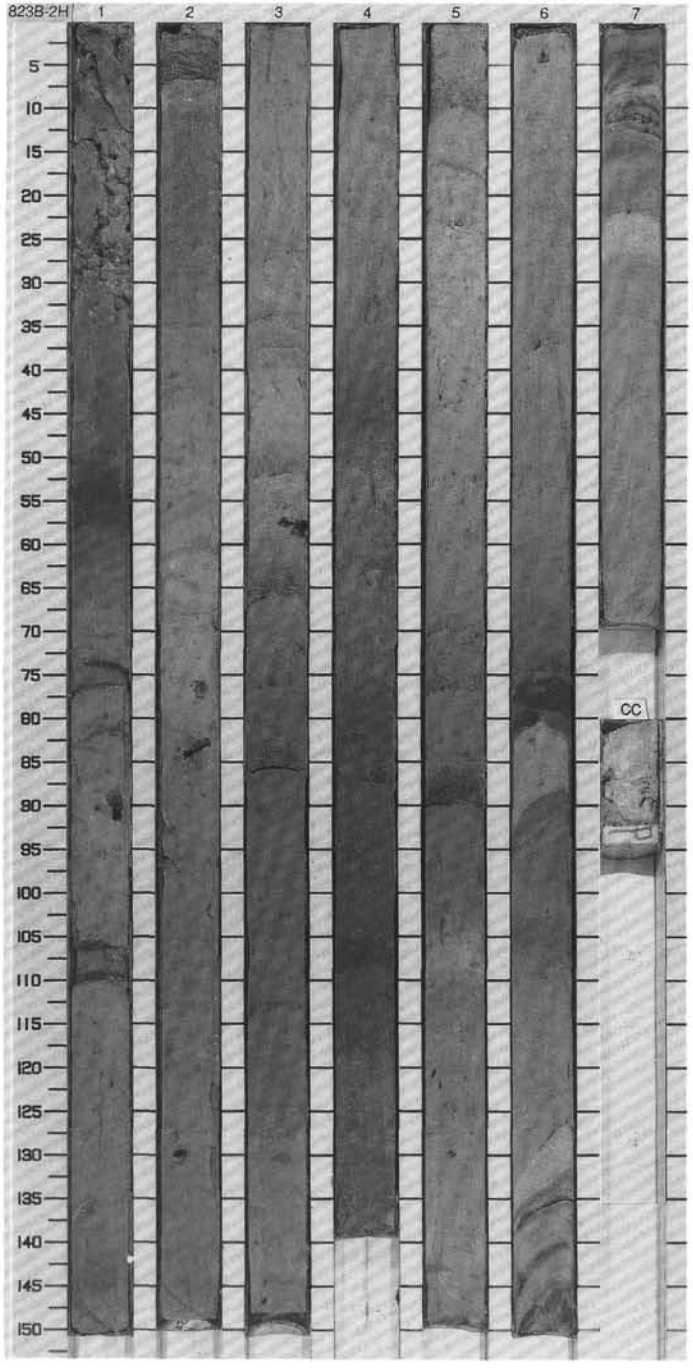
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN15			N			1	0.5				
									1.0				
					N			2					
					N			3					
					N			4					
					N			5					
					N			6					
					N			7					
								CC					PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL MICRITIC OOZE with BIOCLASTS; BIOCLASTIC PACKSTONE with QUARTZ

Major Lithology: Light gray (5Y 7/1) NANNOFOSSIL MICRITIC OOZE with BIOCLASTS. Bioturbation is common; clay content increases below Section 3. Below 80 cm in Section 6, bedding is steeply inclined and contorted, suggesting soft sediment deformation; color of the sediment becomes light olive gray (5Y 7/2) and laminae are common.

Minor Lithology: Dark gray (5Y 4/1) BIOCLASTIC PACKSTONE with QUARTZ forming thin (few cm) interbeds within the core. FORAMINIFERS commonly contain pyrite. Packstone units display sharp bases and transitional tops. From 80-85 cm, LITHOCLASTIC RUDSTONE with a light gray (5Y 7/1) NANNOFOSSIL OOZE matrix. Clasts are composed of dark gray (5Y 4/1) NANNOFOSSIL OOZE.



SITE 823 HOLE B CORE 3H CORED INTERVAL 17.8-27.3 mbsf

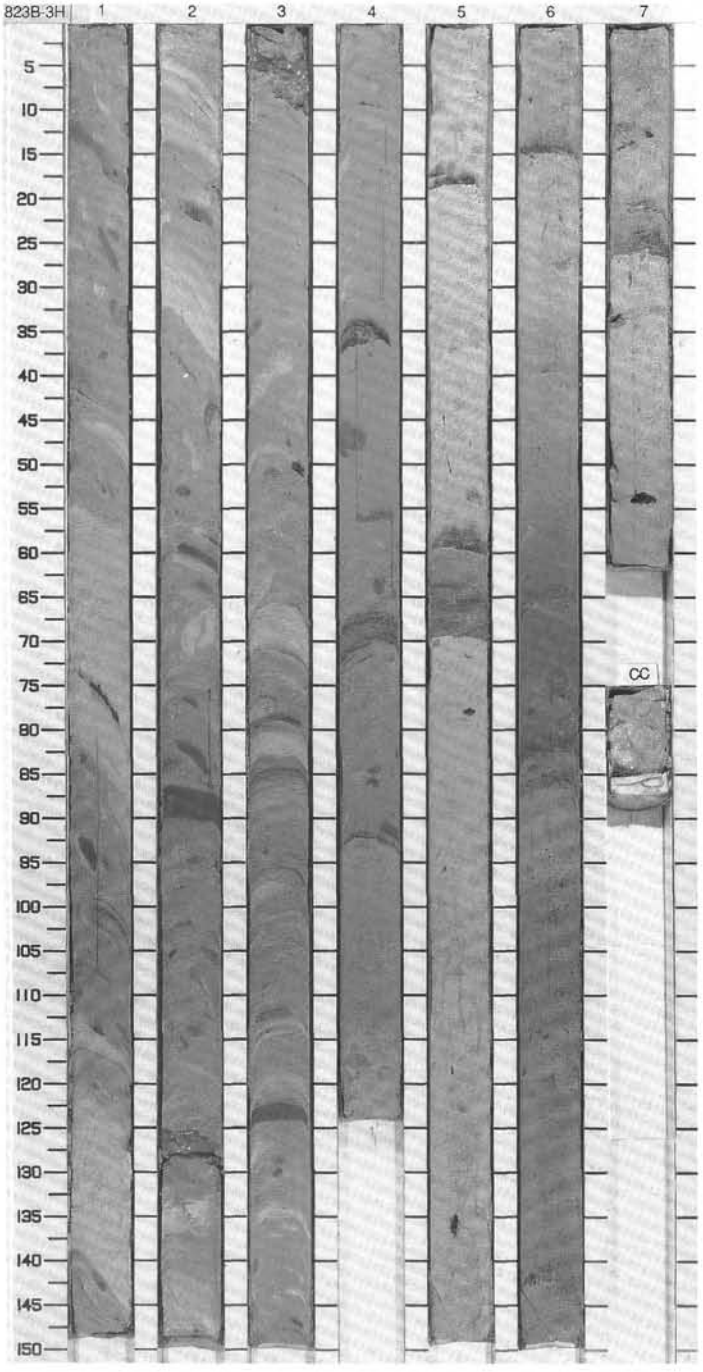
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	CN 15				N			1	0.5				
					N				1.0				
					N			2					
					N			3					
					N			4		VOID			
					N			5					
					N			6					
					N			7					
								CC					PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with FORAMINIFERS and BIOCLASTS

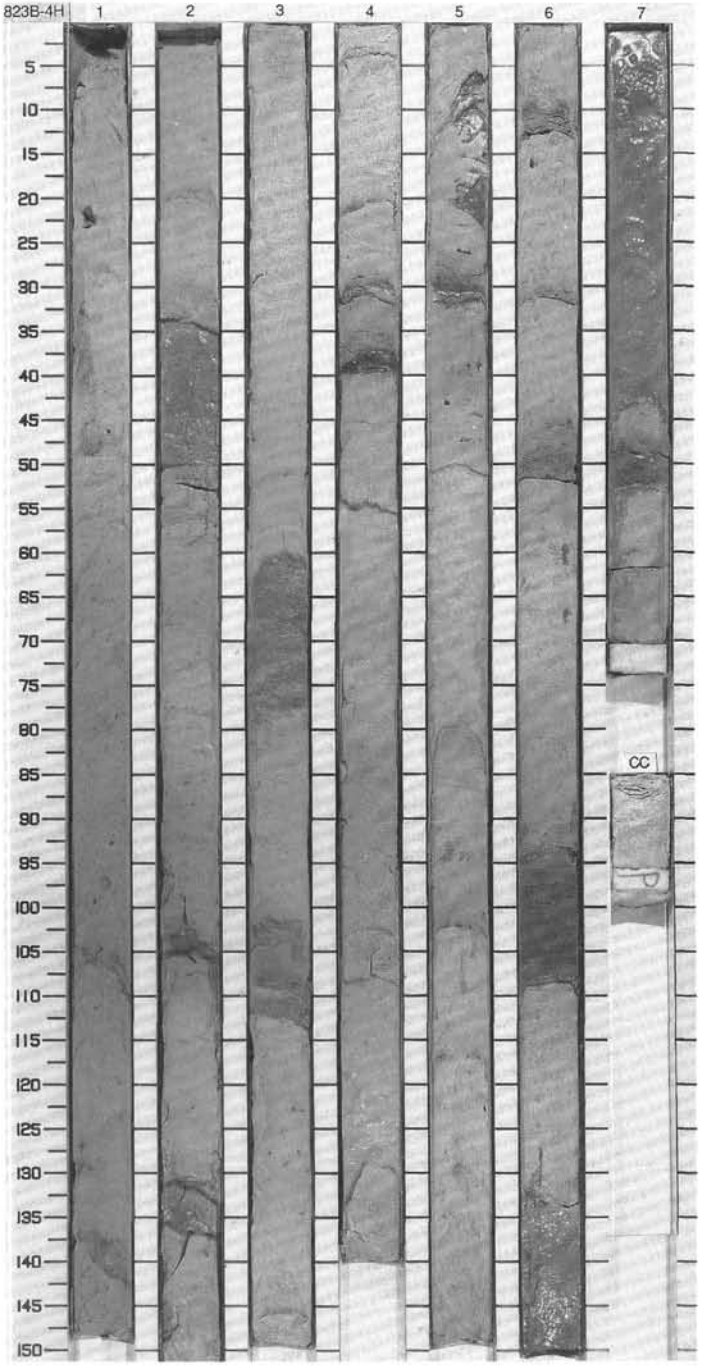
Major Lithology: Variegated gray (5Y 7/1 to 5Y 5/1), laminated to homogeneous NANNOFOSSIL OOZE with FORAMINIFERS and BIOCLASTS. The top 4 sections display contorted, folded, and steeply inclined bedding suggesting soft sediment deformation. Isolated clasts of dark gray (5Y 4/1) NANNOFOSSIL OOZE with CLAY occur throughout the deformed part of the core.

Minor Lithology: Dark greenish gray and greenish gray (5GY 4/1 to 5GY 6/1), fine to medium sand-sized BIOCLASTIC PACKSTONE with FORAMINIFERS. Units are interbedded both within the deformed bedding as well as throughout Sections 5-CC. Sharp bases and transitional tops characterize the units which are commonly <10 cm thick. LITHOCLASTIC FLOATSTONE, with clasts of dark gray (5Y 4/1) NANNOFOSSIL OOZE with CLAY within a gray (5Y 5/1) NANNOFOSSIL OOZE matrix.



SITE 823 HOLE B CORE 4H CORED INTERVAL 27.3 -36.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
PLEISTOCENE		CN14a			N			1	0.5					NANNOFOSSIL OOZE with FORAMINIFERS and BIOCLASTS; BIOCLASTIC PACKSTONE
					N			2	1.0					Major Lithology: Greenish gray (5GY 7/1) and gray (5Y 7/1; 10YR 6/1), bioturbated and firm NANNOFOSSIL OOZE with FORAMINIFERS and BIOCLASTS. Ooze is interbedded with silt- to medium sand-sized, variable gray (N4-6; and 5Y 5/1) BIOCLASTIC PACKSTONES. These latter units are commonly less than 20 cm in thickness but vary up to about 45 cm, and commonly show normal grading. There is a common repetitive pattern in which the ooze is consistently darker and with better preserved bioturbated texture immediately overlying each packstone unit, but grade upward into a lighter green color.
					?			3						
					N			4						
					?			5						
					N			6						
	A/G				N			7						
								CC					PAL	



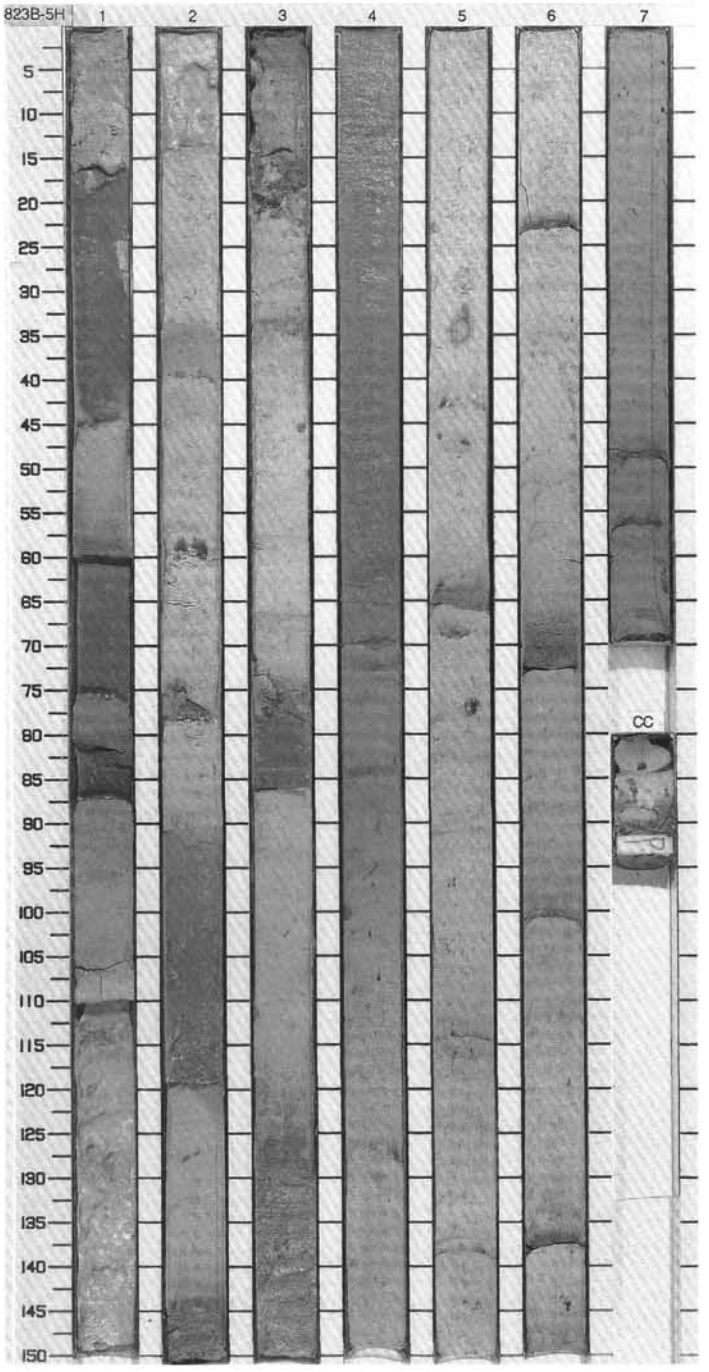
SITE 823 HOLE B CORE 5H CORED INTERVAL 36.8-46.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN14a			N	N	N	1	0.5				
					N	N	N		1.0				
					N	N	N	2					
					N	N	N	3					
					N	N	N	4					
					N	N	N	5					
					N	N	N	6					
					N	N	N	7					
					N	N	N	CC					PAL

LITHOLOGIC DESCRIPTION

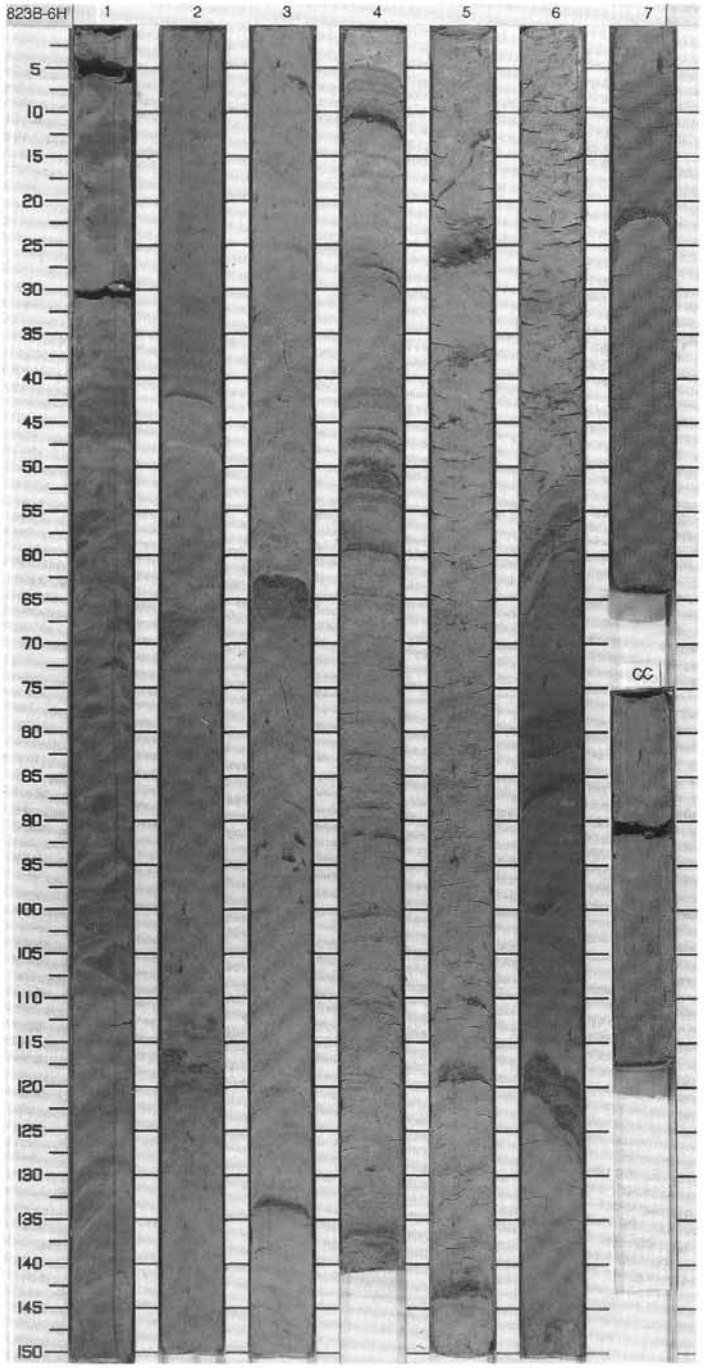
NANNOFOSSIL OOZE with FORAMINIFERS and BIOCLASTS; BIOCLASTIC PACKSTONE

Major Lithology: Greenish gray (5GY 7/1) and gray (5Y 7/1; 10YR 6/1), bioturbated and firm, NANNOFOSSIL OOZE with FORAMINIFERS and BIOCLASTS. Ooze is interbedded with silt- to medium sand-sized BIOCLASTIC PACKSTONE. These latter units are commonly less than 30 cm in thickness, and show normal grading. There is a common repetitive pattern in which the ooze is consistently darker with better developed bioturbated texture immediately overlying each packstone unit, but grade upward into a lighter green color.



SITE 823 HOLE B CORE 6H CORED INTERVAL 46.3-55.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
PLEISTOCENE		CN14a A/G			N			1	0.5 1.0					NANNOFOSSIL OOZE with BIOCLASTS; CLAYEY BIOCLASTIC MUDSTONE with NANNOFOSSILS; BIOCLASTIC PACKSTONE Major Lithology: In Sections 2-4, light greenish gray to gray (5GY 7/1 to 5GY 6/1) NANNOFOSSIL OOZE with BIOCLASTS; bioturbated to locally laminated and thinly bedded. In Sections 5-CC, CLAYEY BIOCLASTIC MUDSTONE with NANNOFOSSILS changing in color from light gray (10Y 6/1) to dark gray (10Y 5/1) by Section 6 at 80 cm. Minor Lithology: Dark gray (10Y 4/1 to 10Y 5/1) BIOCLASTIC PACKSTONE beds, silt- to fine sand-sized, commonly less than 10 cm thick, and locally showing normal grading. The base of each bed is generally sharp and the top transitional into overlying ooze. In Section 1, LITHOCLASTIC RUDSTONE with variegated gray (10Y 4/1, 4/2, 5/2/, 6/1, 7/1) NANNOFOSSIL OOZE clasts within a lighter gray NANNOFOSSIL OOZE matrix. Soft sediment deformation features are associated with both matrix bedding and clast integrity.
								2						
					N			3						
					N			4						
					N			5						
					N			6						
					N			7						
								CC					PAL	



SITE 823 HOLE B CORE 7H CORED INTERVAL 55.8-65.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN14a			N			1	0.5				*
					N			1	1.0				
					N			2				•••	
					N			3				◆	
					N			4					
					N			5					
					N			6					
					N			7					
								CC					Pal.

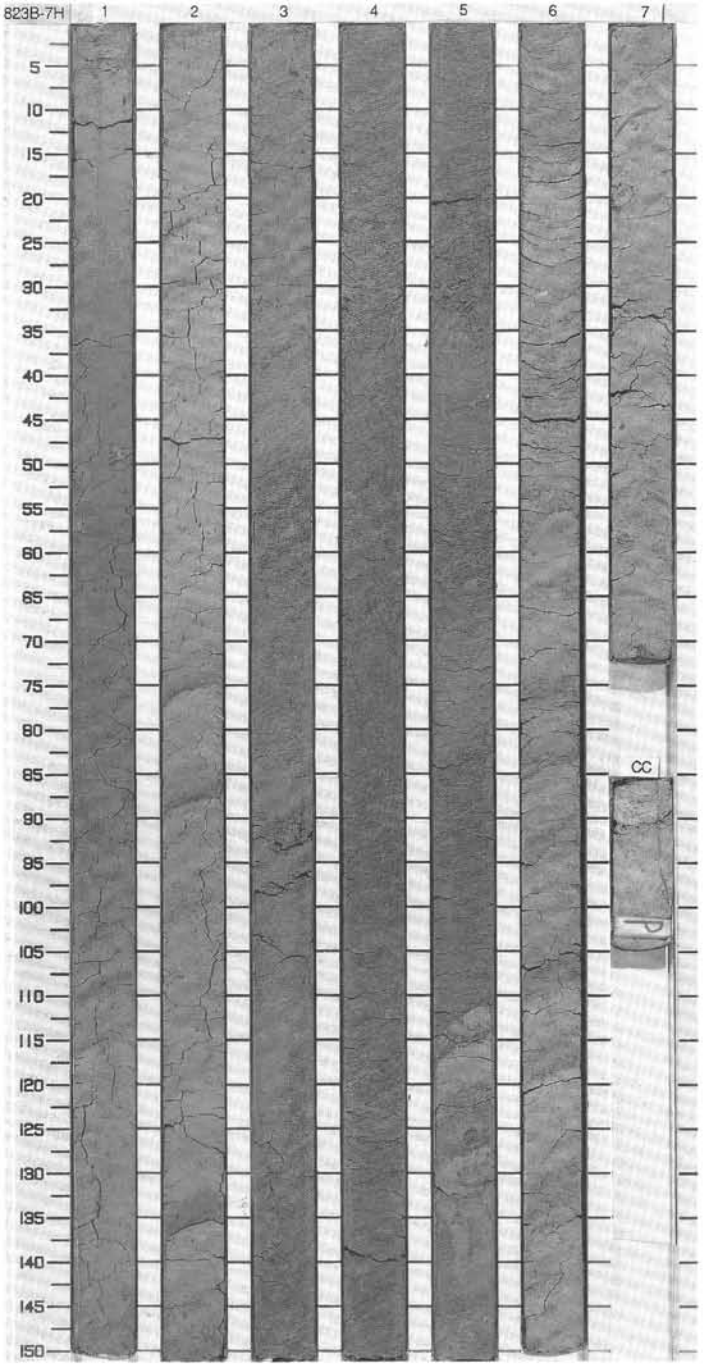
LITHOLOGIC DESCRIPTION

CLAYEY BIOCLASTIC MUD with NANNOFOSSILS; BIOCLASTIC PACKSTONE

Major Lithology: Greenish gray (5GY 6/1 and 5GY 5/1) CLAYEY BIOCLASTIC MUD with NANNOFOSSILS; slightly to well bioturbated. A few thin (few cm) beds within Sections 4 and 5 are BIOCLASTIC PACKSTONE, commonly silt- to fine sand-sized, homogeneous to locally bedded and laminated.

SMEAR SLIDE SUMMARY (%):

	1, 84 D
COMPOSITION:	
Bioclast	40
Clay	25
Foraminifers	5
Nannofossils	20
Quartz	5
Spicules	Tr
Tunicate	5



SITE 823 HOLE B CORE 8H CORED INTERVAL 65.3-74.8 mbsf

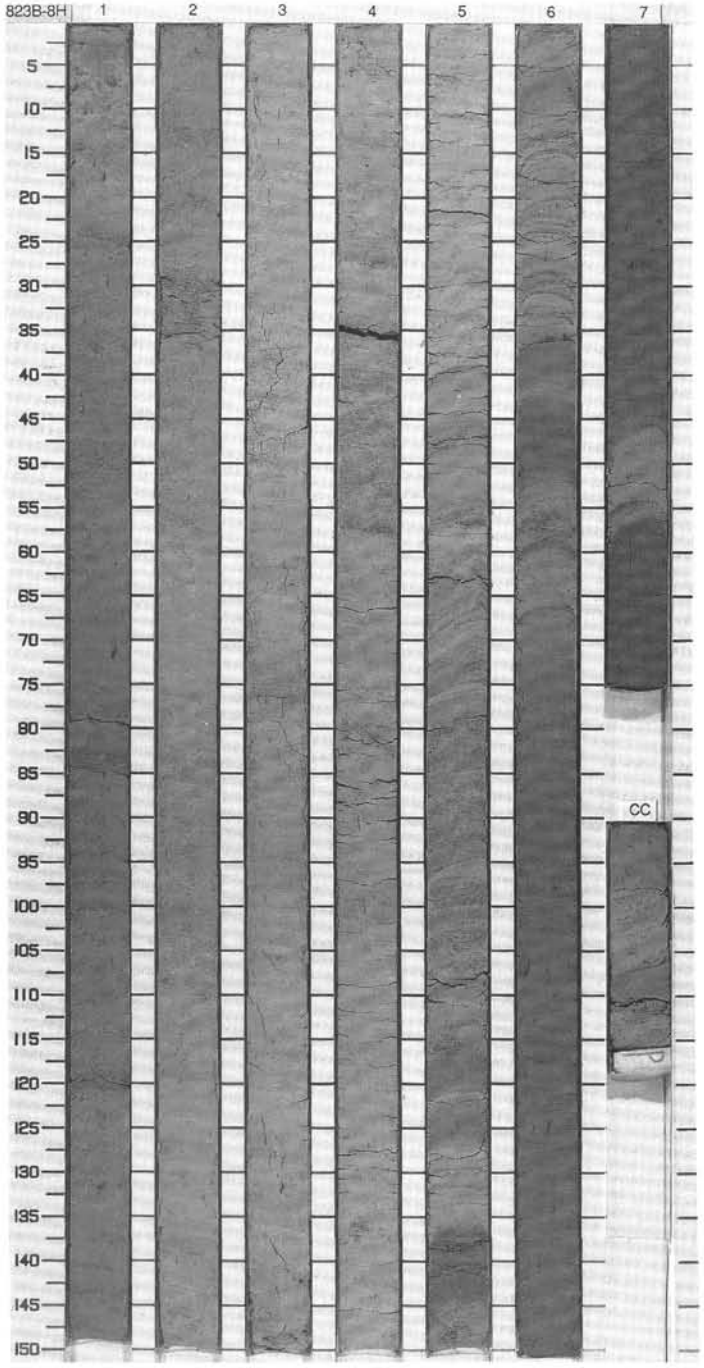
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN14a			N			1	0.5				PAL
					N				1.0				
					N			2					
					N			3					
					N			4					
					N			5					
					N			6					
					N			7					
								CC					

LITHOLOGIC DESCRIPTION

BIOCLASTIC NANNOFOSSIL OOZE; NANNOFOSSIL OOZE with BIOCLASTS; BIOCLASTIC PACKSTONE

Major Lithology: Greenish gray (5GY 6/1 and 5GY 7/1) NANNOFOSSIL OOZE with BIOCLASTS (Sections 1, 5-CC) and BIOCLASTIC NANNOFOSSIL OOZE (Sections 2-4) predominate. Bioturbation mottling is common to abundant. Finely laminated ooze occurs in Section 6 and part of 7.

Minor Lithology: Greenish gray (5GY 6/1) BIOCLASTIC PACKSTONE, silt- to fine sand-sized; sharp base and gradational tops are common for a given unit which is commonly only a few cm in thickness.



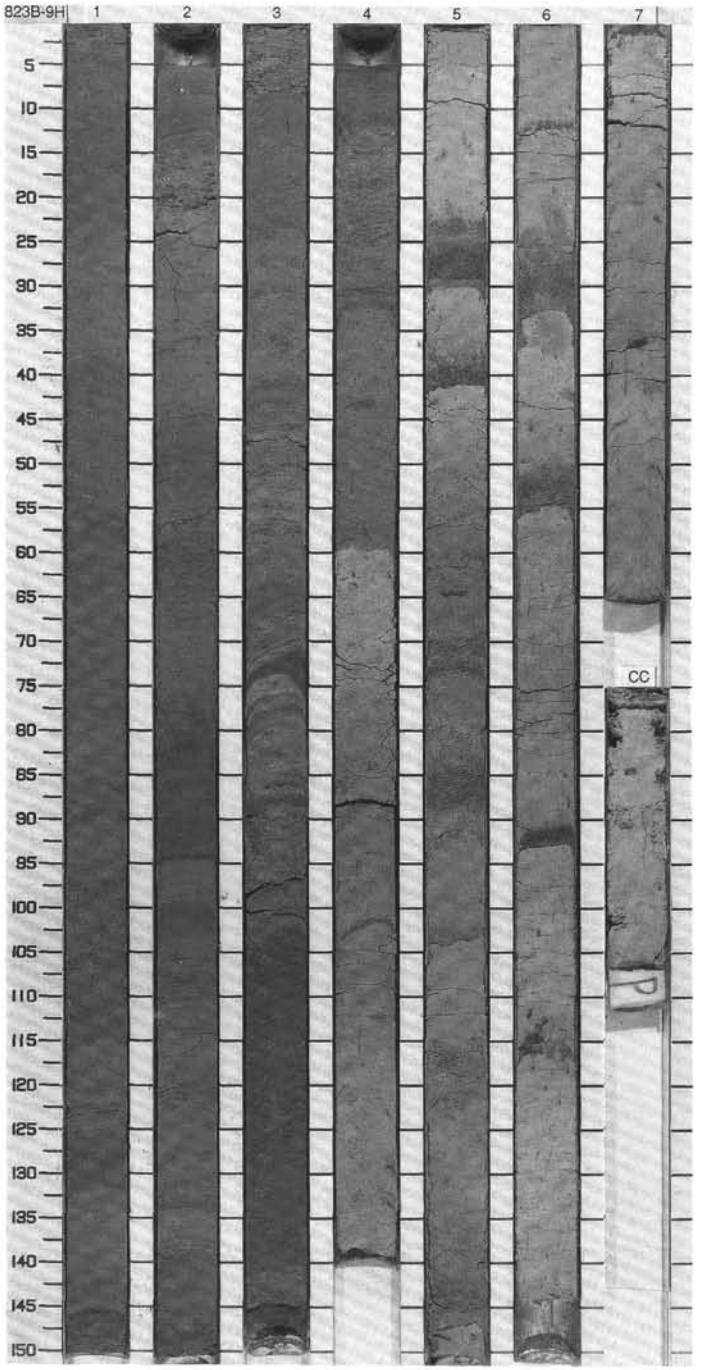
SITE 823 HOLE B CORE 9H CORED INTERVAL 74.8-84.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN13b - CN14a		N	N			1	0.5				
				N	N			2	1.0				
				N	N			3					
				N	N			4					
				N	N			5					
				N	N			6					
				N	N			7					
								CC					PAL

LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL OOZE with BIOCLASTS; BIOCLASTIC PACKSTONE

Major Lithology: Greenish gray (5GY 5/1 and 5GY 6/1) CLAYEY NANNOFOSSIL OOZE with BIOCLASTS, commonly well-laminated to thinly bedded in Sections 1, 3, and the upper part of 4. Below 15 cm in Section 4, the ooze is well bioturbated and is associated with a general color change to light bluish gray (5B7/1) to gray (5Y 5/1). Color variations also occur below Section 4 where ooze is interbedded with BIOCLASTIC PACKSTONE which is commonly gray (5Y 7/1), silt- to medium sand-sized units less than 40 cm in thickness; normal grading is common. The packstone shows abrupt basal contacts with underlying ooze, and a gradational top; the overlying ooze lightens in colour slightly above the packstone.



SITE 823 HOLE B CORE 10H CORED INTERVAL 84.3-93.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN13b			N			1	0.5				
									1.0				
					N			2					
					N			3					
					N			4					
					N			5					
					N			6					
					N			7					
								CC					PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with CLAY and BIOCLASTS; BIOCLASTIC PACKSTONE

Major Lithology: Greenish gray and gray (5GY 6/1 to 5GY5/1 with N6) NANNOFOSSIL OOZE with CLAY and BIOCLASTS; well bioturbated. Some burrows contain silty to sandy BIOCLASTIC PACKSTONE fill.

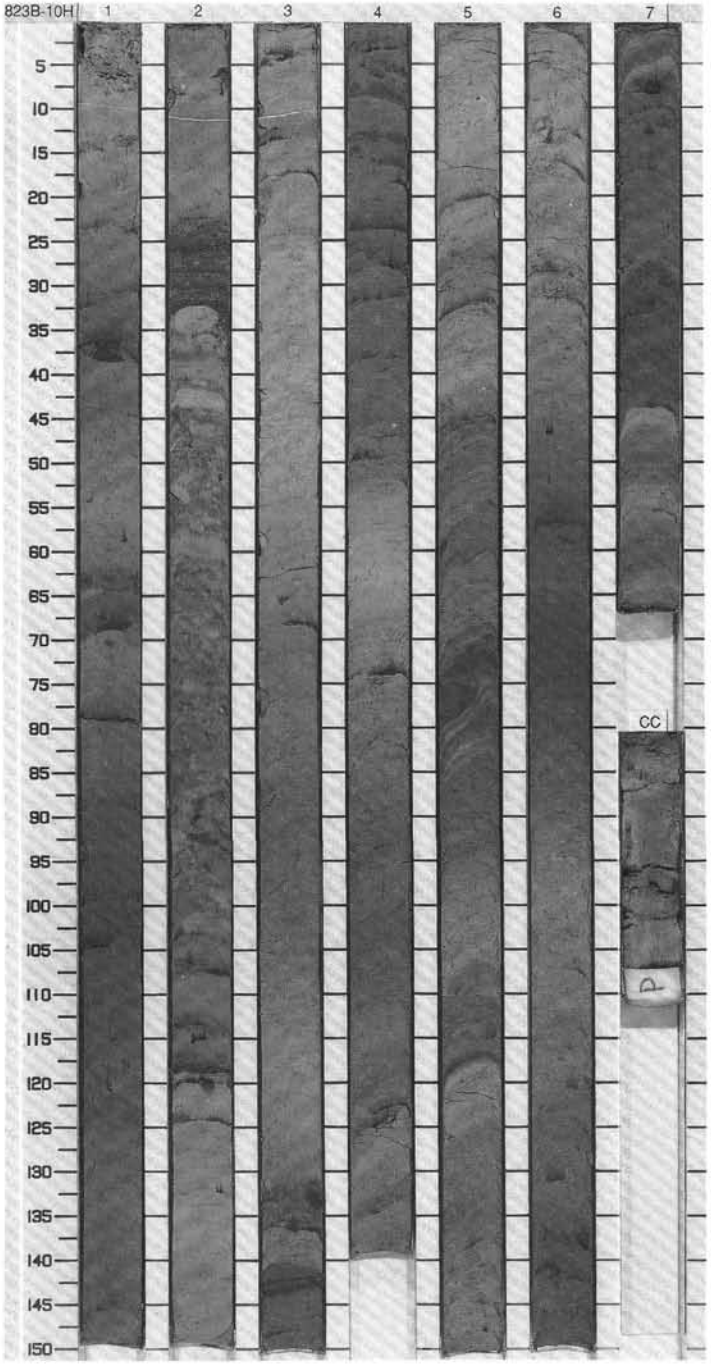
Minor Lithology: Gray (N7 to 5Y 5/1) BIOCLASTIC PACKSTONE; silt- to medium sand-sized and homogeneous. Beds are less than a few cm in thickness, appear to be lensoid (discontinuous), and are slightly deformed by soft sediment deformation. Unlithified LITHOCLASTIC RUDSTONE, with clasts consisting of variegated shades of gray and white NANNOFOSSIL OOZE with CLAY and BIOCLASTS, within a matrix of lighter gray NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

COARSE FRACTION SUMMARY (%):

3, 103
D

COMPOSITION:

Bioclast	85
Foraminifers	15



SITE 823 HOLE B CORE 11H CORED INTERVAL 93.8-103.3 mbsf

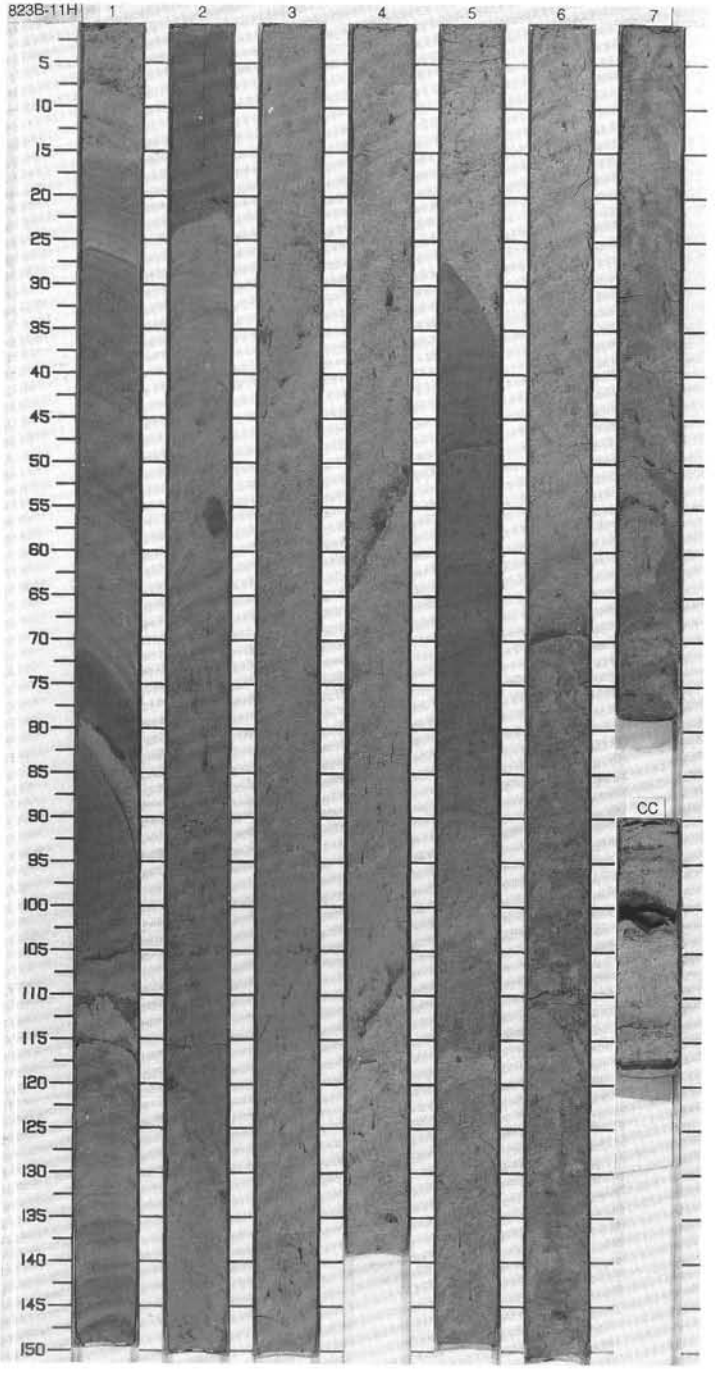
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	CN13b			N			1	0.5, 1.0				
					N			2					
					N			3					
					N			4					
					N			5					TW
					N			6					
					N			7					
								CC					PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with CLAY and BIOCLASTS: BIOCLASTIC PACKSTONE

Major Lithology: Gray and greenish gray (N6; 5GY 5/1 to 5GY6/1), laminated to homogenous. NANNOFOSSIL OOZE with CLAY and BIOCLASTS. Bedding is strongly contorted, steeply inclined and locally folded in Sections 1, 2, and 4. More homogenous and relatively undisturbed sections may however form a block within the overall disturbed sequence of strata. Local isolated clasts of NANNOFOSSIL OOZE are present.

Minor Lithology: Gray to dark gray (5Y 4/1 to 5/1) BIOCLASTIC PACKSTONE forms thin (few cm) contorted beds within the above ooze. Also Sections 6, 70-150 cm, and 7 contain LITHOCLASTIC RUDSTONE, with clasts of light to dark gray (5Y 6/1 to 4/1) NANNOFOSSIL OOZE with CLAY which appear smeared and distorted due to soft sediment deformation.



SITE 823 HOLE B CORE 12H CORED INTERVAL 103.3-112.8 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G; NANNOFOSSILS CN13b; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N

PHYS. PROPERTIES: 59.4% 1.85; 53.9% 1.88; 51.5% 1.89; 57.3% 1.87; 52.4% 1.88; 53.4% 1.88; 56.7% 1.81

CHEMISTRY: 58.6%; 78.0% 77.1%; 50.1%; 39.7%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG; LW; PAL

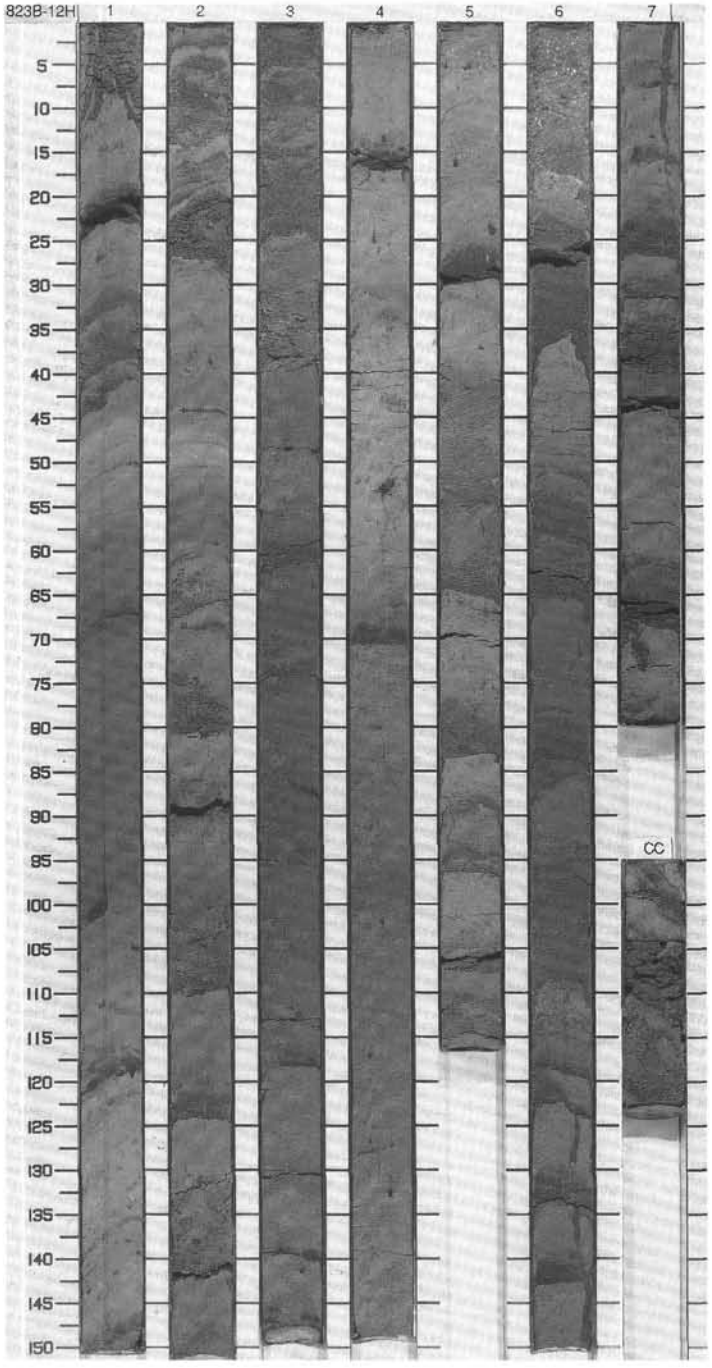
LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with BIOCLASTS and CLAY; BIOCLASTIC PACKSTONE

Major Lithology: Greenish gray (5GY 5/1 to 6/1) NANNOFOSSIL OOZE with BIOCLASTS and CLAY; locally laminated but generally well bioturbated. Thin (few cm) to thick (10's of cm) beds of normally graded to homogeneous silt- to sand-sized BIOCLASTIC PACKSTONE are interbedded with the above ooze. Orientation of the beds is variable suggesting some distortion of the entire sedimentary sequence by soft sediment deformation. Packstone beds display sharp, locally scoured bases and transitional tops. The overlying ooze changes in color from darker greenish gray (with well preserved bioturbated textures) to lighter greenish gray (but equally bioturbated).

SMEAR SLIDE SUMMARY (%):

	1, 74 D	CF 2, 24 D	3, 149 D	CF 5, 53 M
COMPOSITION:				
Aragonite	3	---	3	---
Bioclast	15	40	---	70
Calcareous fragments	---	5	---	---
Clay	12	---	---	---
Dolomite	---	5	---	---
Foraminifers	2	20	2	20
Glauconite	---	Tr	---	Tr
Micrite	20	---	45	---
Nannofossils	40	---	45	---
Opaques	Tr	Tr	---	Tr
Quartz	7	30	5	10



SITE 823 HOLE B CORE 13X CORED INTERVAL 112.8-122.4 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N22 - N23; NANNOFOSSILS A/G CN13b; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N? N? N? N? N?

PHYS. PROPERTIES: ● 58.95 1.80 ● 60.0% 1.79 ● 56.5% 1.82 ● 56.7% 1.85 ● 56.1% 1.85

CHEMISTRY: ● 52.6% ● 30.2% ● 49.6%

SECTION: 1 2 3 4 5 6 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: PAL

LITHOLOGIC DESCRIPTION

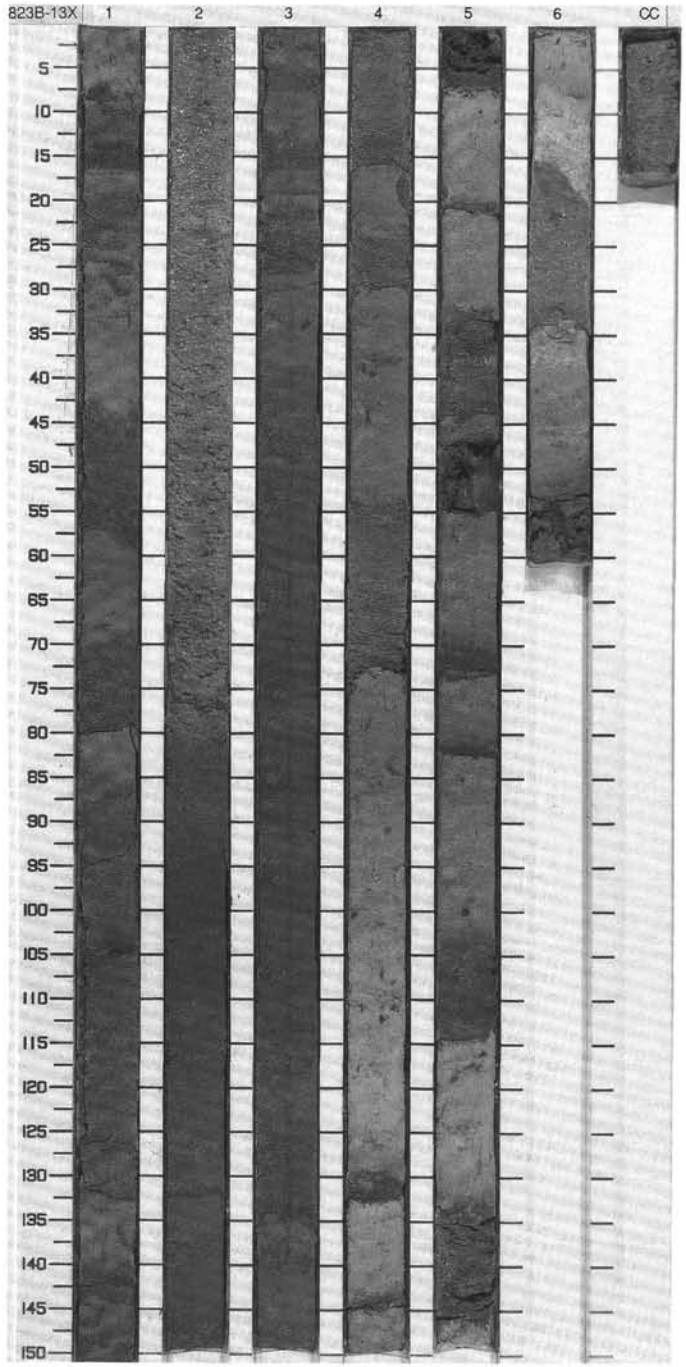
NANNOFOSSIL OOZE with CLAY and BIOCLASTS; CLAYEY NANNOFOSSIL MIXED SEDIMENT with BIOCLASTS and QUARTZ; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Gray to light gray (5Y 5/1 to 5Y 7/1) NANNOFOSSIL OOZE with CLAY and BIOCLASTS. Pyritic burrow fills contain SKELETAL FORAMINIFER PACKSTONE.

Minor Lithology: From 82 cm in Section 2 to 55 cm in Section 4, dark gray brown (10YR 3/2) grading down to gray (5Y 5/1) CLAYEY NANNOFOSSIL MIXED SEDIMENT with BIOCLASTS and QUARTZ. Throughout core, dark gray (5Y 4/1), locally pyritic, normally graded, sand-sized SKELETAL PACKSTONE with BIOCLASTS (notably prismatic calcite) units. The base of each unit is abrupt whereas the top is gradational into overlying ooze or mixed sediment.

SMEAR SLIDE SUMMARY (%):

	3, 84 D	6, 12 D	CF 6, 20 D
COMPOSITION:			
Aragonite	3	---	---
Bioclast	10	---	70
Calcite	---	10	---
Carbonate particles	---	15	---
Clay	30	---	---
Dolomite	---	---	Tr
Echinoid	---	---	3
Foraminifers	---	8	5
Glauconite	---	---	2
Micrite	---	35	---
Mollusk	---	---	15
Nannofossils	45	30	---
Pyrite	---	Tr	---
Quartz	12	---	5
Spicules	---	2	---



SITE 823 HOLE B CORE 14X CORED INTERVAL 122.4-132.1 mbsf

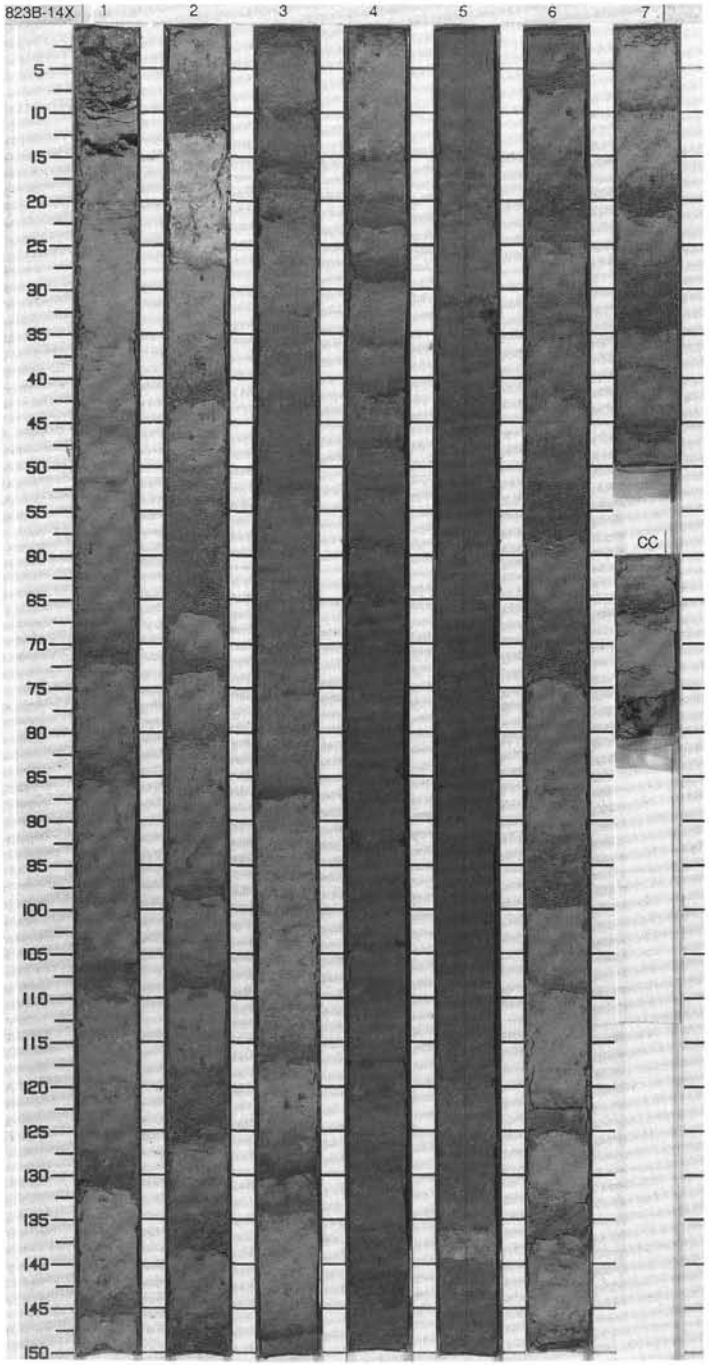
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
PLEISTOCENE	A/G	N22 - N23	A/G	CN13b	N?	● 58.6% 1.82	● 28.35%	6					
						● 56.3% 1.86	● 53.1%	5					
						● 55.4% 1.86	● 60.0% 1.80	4					
						● 58.5% 1.74	● 57.4%	3					
						● 58.3% 1.76		2	1.0				
								1	0.5				PAL
								CC					

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with BIOCLASTS and CLAY; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1) NANNOFOSSIL OOZE with BIOCLASTS and CLAY. There is a transition in color where ooze overlies skeletal packstone; from darker greenish gray (5GY 5/1 to 5GY 4/1) up into lighter colored sediment (5GY 6/1).

Minor Lithology: Gray (5Y 5/1) to dark greenish gray (5GY 4/1), very fine to medium sand-sized SKELETAL PACKSTONE with FORAMINIFERS, pyritic in places and with minor SILICICLASTIC GRAINS. The base of packstone beds are sharp and the tops commonly appear transitional with overlying ooze.



SITE 823 HOLE B CORE 15X CORED INTERVAL 132.1-141.7 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS A/G N22 - N23; NANNOFOSSILS A/G CN13b; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N?

PHYS. PROPERTIES: 55.1% 1.93; 58.6% 1.80; 54.8% 1.89; 55.0% 1.83; 53.4% 1.88; 57.5% 1.91

CHEMISTRY: 52.0% 35.6%; 49.5%; 59.1%

SECTION: 1 2 3 4 5 6 7 CC

METERS: 0.5 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

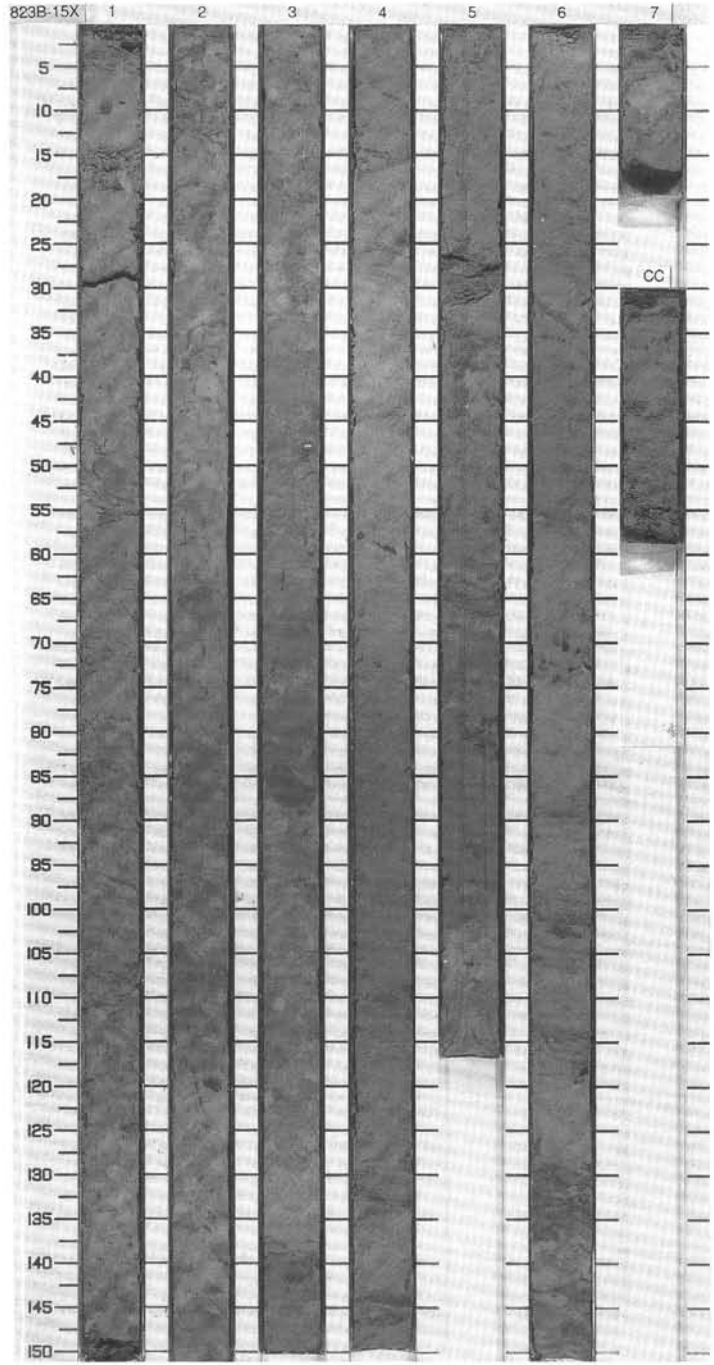
SAMPLES: OG, TW, PAL

LITHOLOGIC DESCRIPTION

LITHOCLASTIC RUDSTONE; NANNOFOSSIL OOZE with CLAY; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Variegated gray (light to dark: 5GY 4/1 to 6/1; 5G 6/1), firm, LITHOCLASTIC RUDSTONE with a NANNOFOSSIL OOZE with CLAY matrix. Clast lithologies are NANNOFOSSIL OOZE with CLAY, but of varying color (shades of gray and greenish gray). The base of the unit displays slumped bedding. Clasts show "smeared", deformed edges suggesting soft sediment deformation. Skeletal packstone forms "rinds" a few millimeters thick around many clasts, as well as displaying small pockets and tortuous, anastomosing geometries (possible burrows) which cross-cut and wrap around many of the clasts. Another major lithology is undisturbed to locally contorted, greenish gray (5GY 6/1 and 5GY 5/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY.

Minor Lithology: Within the above unit, gray (5Y 5/1), very fine to medium sand-sized SKELETAL PACKSTONE with FORAMINIFERS form discrete, thin, normally graded beds. Abrupt bases and transitional tops characterize these beds.



SITE 823 HOLE B CORE 16X CORED INTERVAL 141.7-151.4 mbsf

TIME-ROCK UNIT: PLEISTOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: N22 - N23 (A/G); NANNOFOSSILS: CN13a (A/G); RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N?

PHYS. PROPERTIES: ● 50.2% 1.95; ● 52.9% 1.87; ● 52.7% 1.88; ● 53.7% 1.86; ● 52.6% 1.91; ● 57.8% 1.97

CHEMISTRY: ● 32.7%; ● 55.75; ● 63.0%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

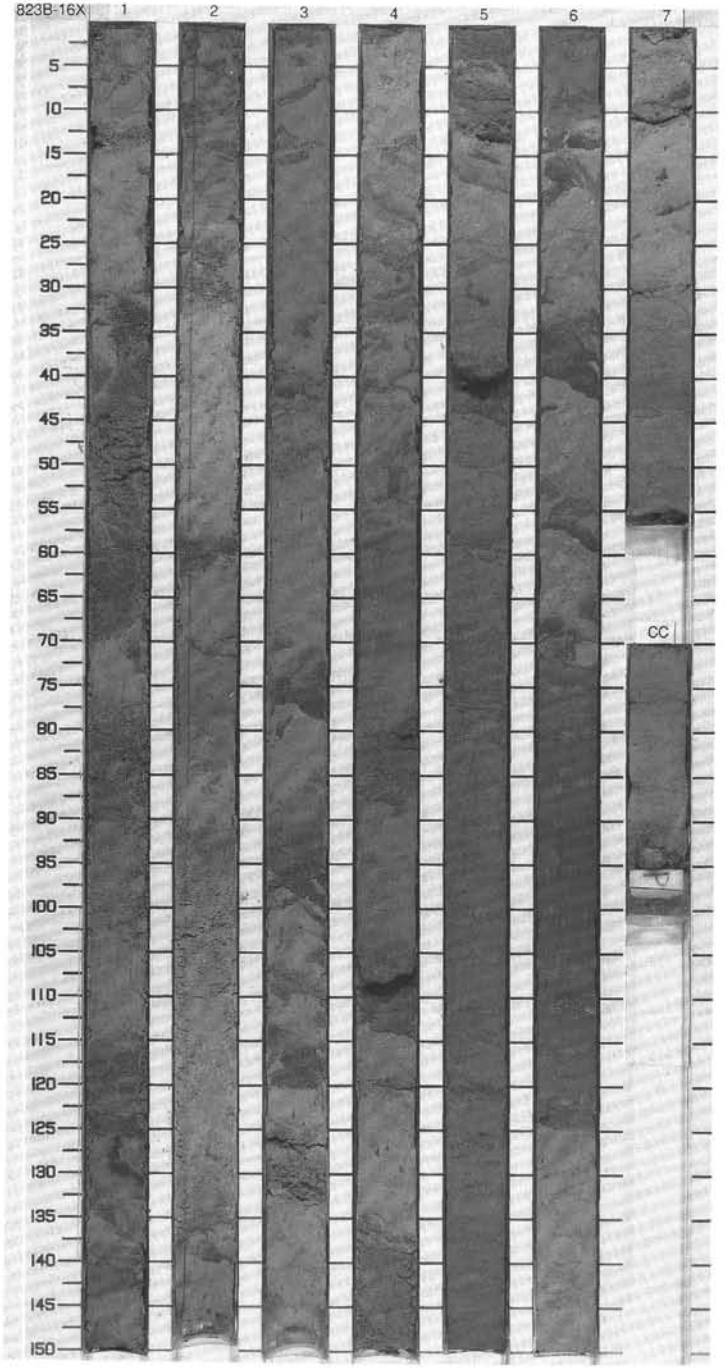
CLAYEY NANNOFOSSIL OOZE

Major Lithology: Gray (5Y 6/1) CLAYEY NANNOFOSSIL OOZE.

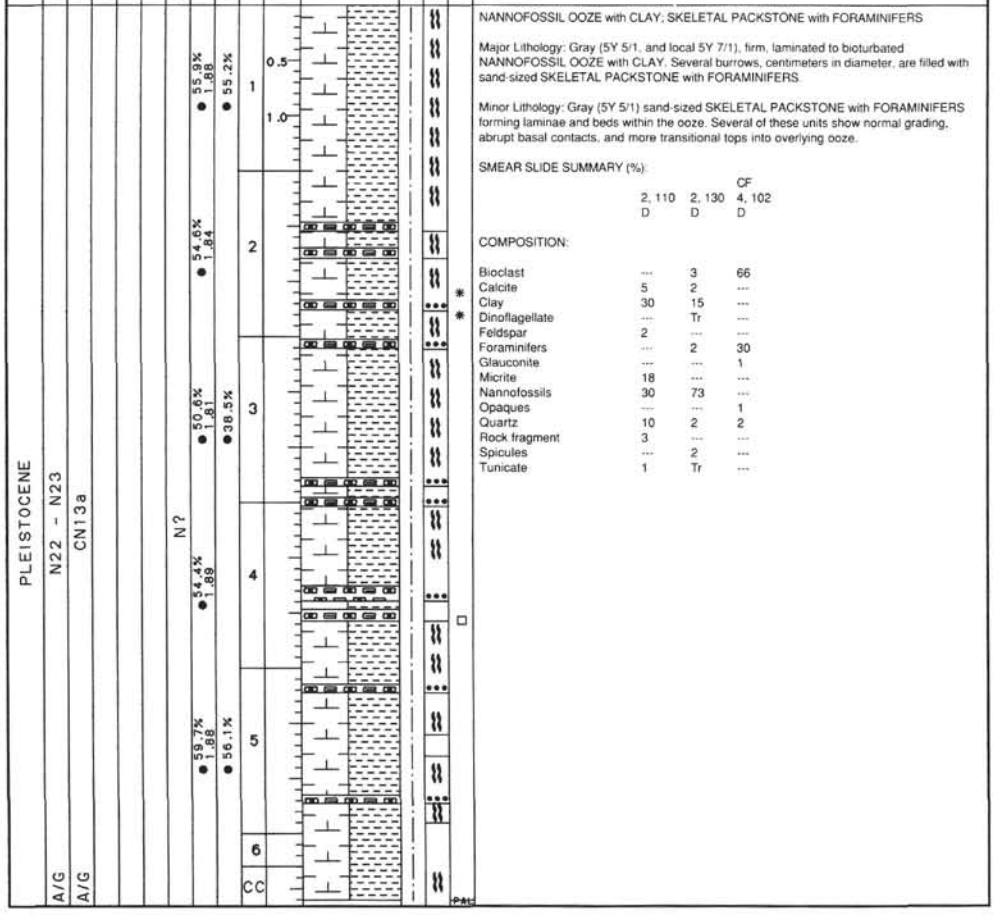
Minor Lithology: Gray (5Y 6/1) BIOCLASTIC PACKSTONE with PYRITIC FORAMINIFERS.

SMEAR SLIDE SUMMARY (%):

	2, 78 D	CF 2, 120 D	5, 140 D
COMPOSITION:			
Bioclast	10	90	5
Calcite	---	---	2
Clay	35	---	30
Foraminifers	---	10	---
Nannofossils	45	---	55
Quartz	5	---	5
Rock fragment	---	---	3
Spicules	2	---	---
Tunicate	3	---	Tr



SITE 823 HOLE B CORE 17X CORED INTERVAL 151.4-161.1 mbsf



LITHOLOGIC DESCRIPTION

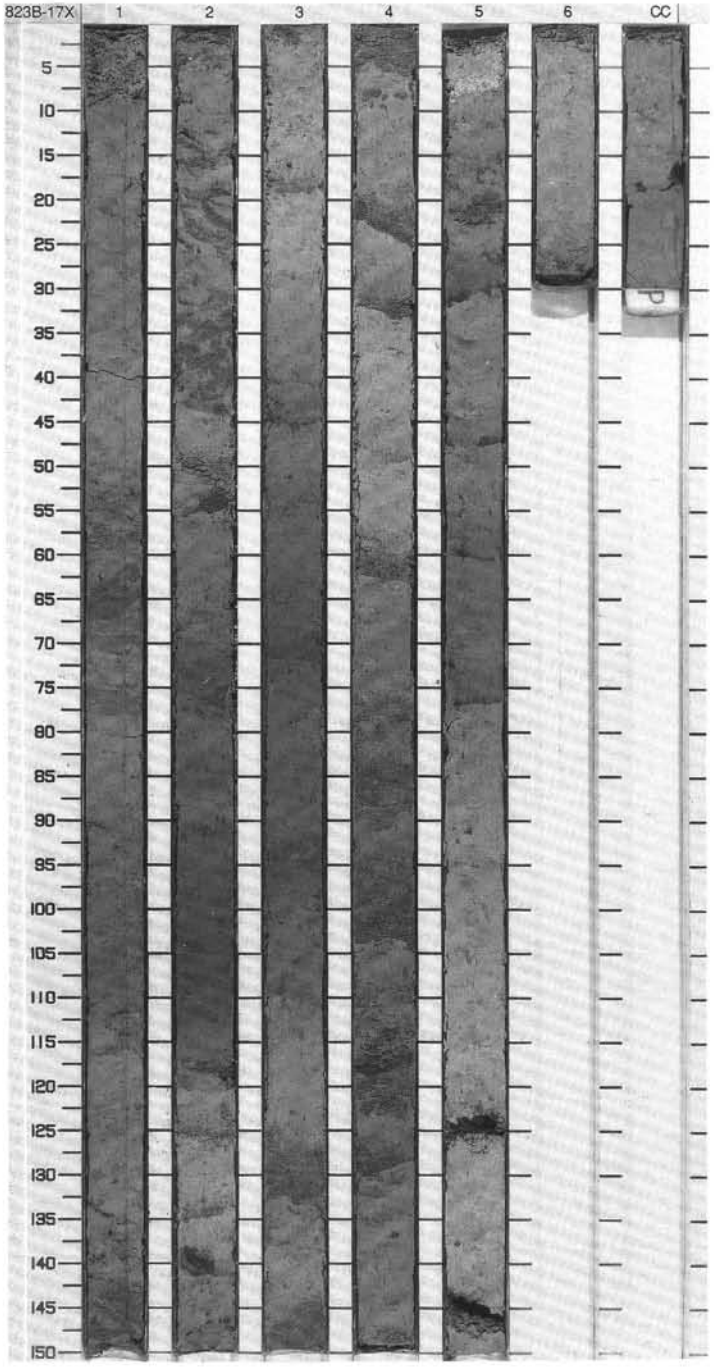
NANNOFOSSIL OOZE with CLAY; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Gray (5Y 5/1, and local 5Y 7/1), firm, laminated to bioturbated NANNOFOSSIL OOZE with CLAY. Several burrows, centimeters in diameter, are filled with sand-sized SKELETAL PACKSTONE with FORAMINIFERS.

Minor Lithology: Gray (5Y 5/1) sand-sized SKELETAL PACKSTONE with FORAMINIFERS forming laminae and beds within the ooze. Several of these units show normal grading, abrupt basal contacts, and more transitional tops into overlying ooze.

SMEAR SLIDE SUMMARY (%):

	2, 110 D	2, 130 D	CF 4, 102 D
COMPOSITION:			
Bioclast	---	3	66
Calcite	5	2	---
Clay	30	15	---
Dinoflagellate	---	Tr	---
Feldspar	2	---	---
Foraminifers	---	2	30
Glauconite	---	---	1
Micrite	18	---	---
Nannofossils	30	73	---
Opaques	---	---	1
Quartz	10	2	2
Rock fragment	3	---	---
Spicules	---	2	---
Tunicate	1	Tr	---



SITE 823 HOLE B CORE 18X CORED INTERVAL 161.1-170.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G	N22 - N23	CN12d	A/G	N?	• 55.4% 1.81 • 57.9% 1.82 • 55.4% 1.89 • 51.3% 1.93 • 50.1% 1.82 • 52.5% 1.79	• 60.2% • 58.7% • 31.2% • 63.3%	1 2 3 4 5 6 CC	0.5 1.0				OG LW PAL

LITHOLOGIC DESCRIPTION

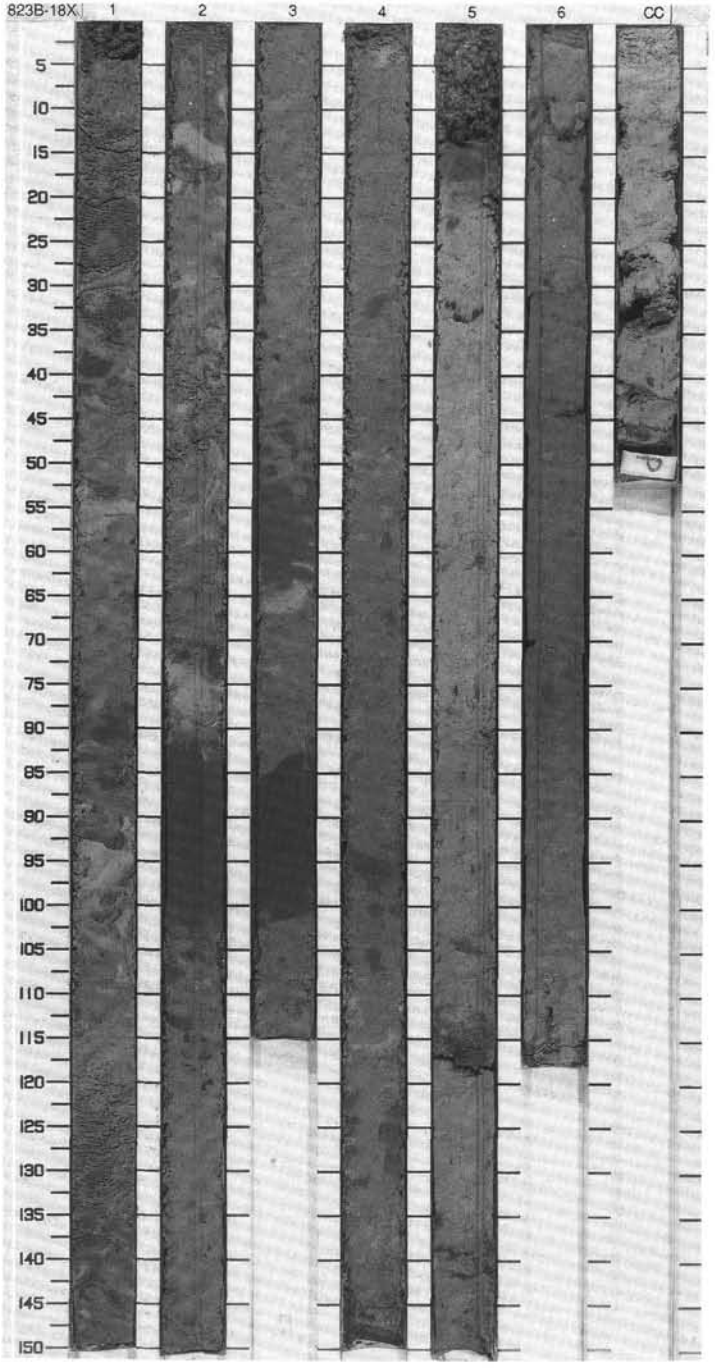
NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated, NANNOFOSSIL OOZE with CLAY and BIOCLASTS. Dark greenish gray (5GY 4/1) clasts of NANNOFOSSIL OOZE occur within Sections 1 and 4.

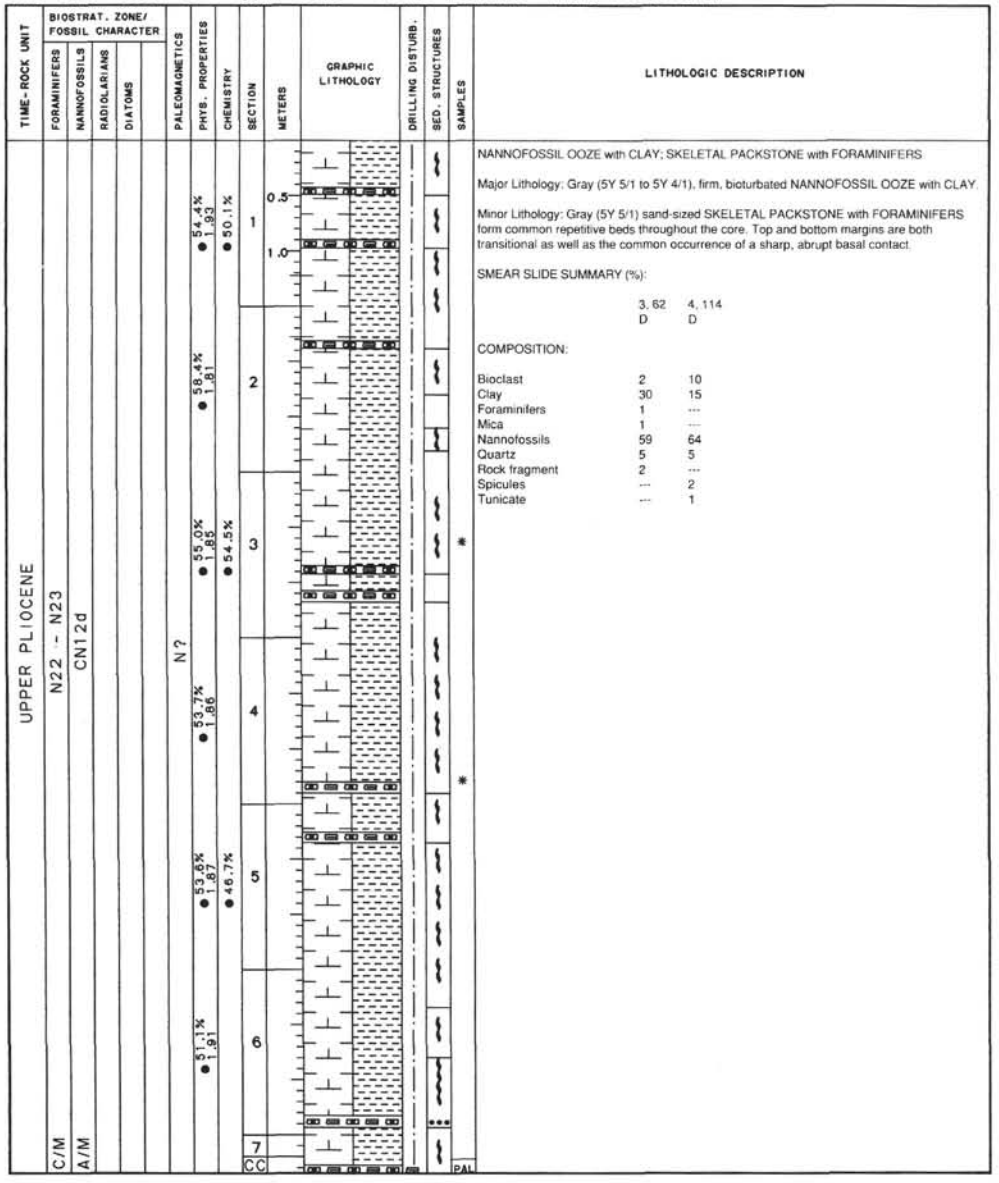
Minor Lithology: Gray (5Y 5/1), sand-sized SKELETAL PACKSTONE with FORAMINIFERS form rare interbeds showing typical abrupt bases and transitional tops. Also rare beds of bioturbated WACKESTONE with transitional margins.

SMEAR SLIDE SUMMARY (%):

	3, 34 D
COMPOSITION:	
Bioclast	15
Clay	35
Foraminifers	Tr
Nannofossils	45
Quartz	5
Spicules	Tr



SITE 823 HOLE B CORE 19X CORED INTERVAL 170.8-180.5 mbsf



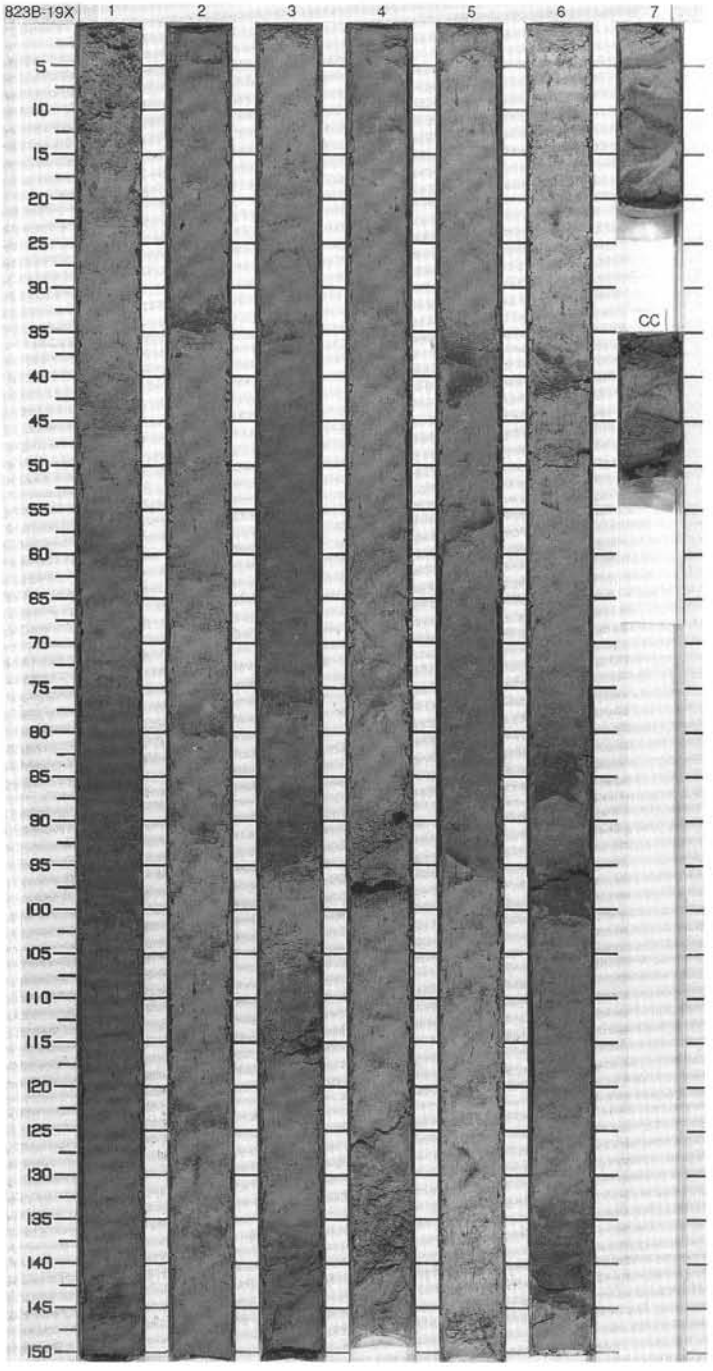
NANNOFOSSIL OOZE with CLAY; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Gray (5Y 5/1 to 5Y 4/1), firm, bioturbated NANNOFOSSIL OOZE with CLAY.

Minor Lithology: Gray (5Y 5/1) sand-sized SKELETAL PACKSTONE with FORAMINIFERS form common repetitive beds throughout the core. Top and bottom margins are both transitional as well as the common occurrence of a sharp, abrupt basal contact.

SMEAR SLIDE SUMMARY (%):

	3, 62 D	4, 114 D
COMPOSITION:		
Bioclast	2	10
Clay	30	15
Foraminifers	1	---
Mica	1	---
Nannofossils	59	64
Quartz	5	5
Rock fragment	2	---
Spicules	---	2
Tunicate	---	1



SITE 823 HOLE B CORE 20X CORED INTERVAL 180.5-190.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G	A/G			N?	● 50.3% 1.98 ● 53.2% 1.90 ● 59.3% 1.80 ● 59.8% 1.76	● 56.4% ● 51.3%	1 2 3 4 CC	0.5 1.0				PAL

N22 - N23

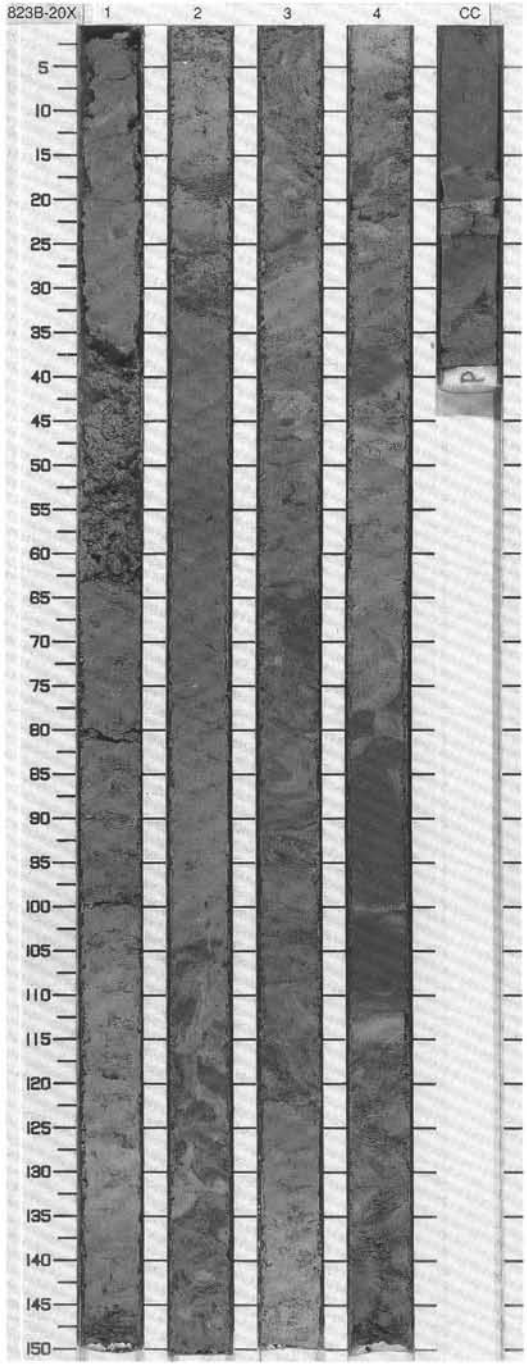
CN12d

NANNOFOSSIL OOZE with CLAY; SKELETAL PACKSTONE with FORAMINIFERS; LITHOCLASTIC RUDSTONE

Major Lithology: From Section 1 through to 100 cm in Section 2, gray (5Y 5/1) NANNOFOSSIL OOZE with CLAY, commonly well bioturbated. Some burrows are filled with sand-sized SKELETAL PACKSTONE with FORAMINIFERS.

Minor Lithology: Between Section 2, 100 cm and Section 3, 60 cm - LITHOCLASTIC RUDSTONE to FLOATSTONE with a NANNOFOSSIL OOZE with CLAY matrix. Sand-sized SKELETAL PACKSTONE with FORAMINIFERS occur intercalated with the major lithology and below about 60 cm in Section 3.

Note, below 60 cm in Section 3, the core displays complex folding and convoluted bedding, with all the above lithologies intermixed.



SITE 823 HOLE B CORE 21X CORED INTERVAL 190.2-199.8 mbsf

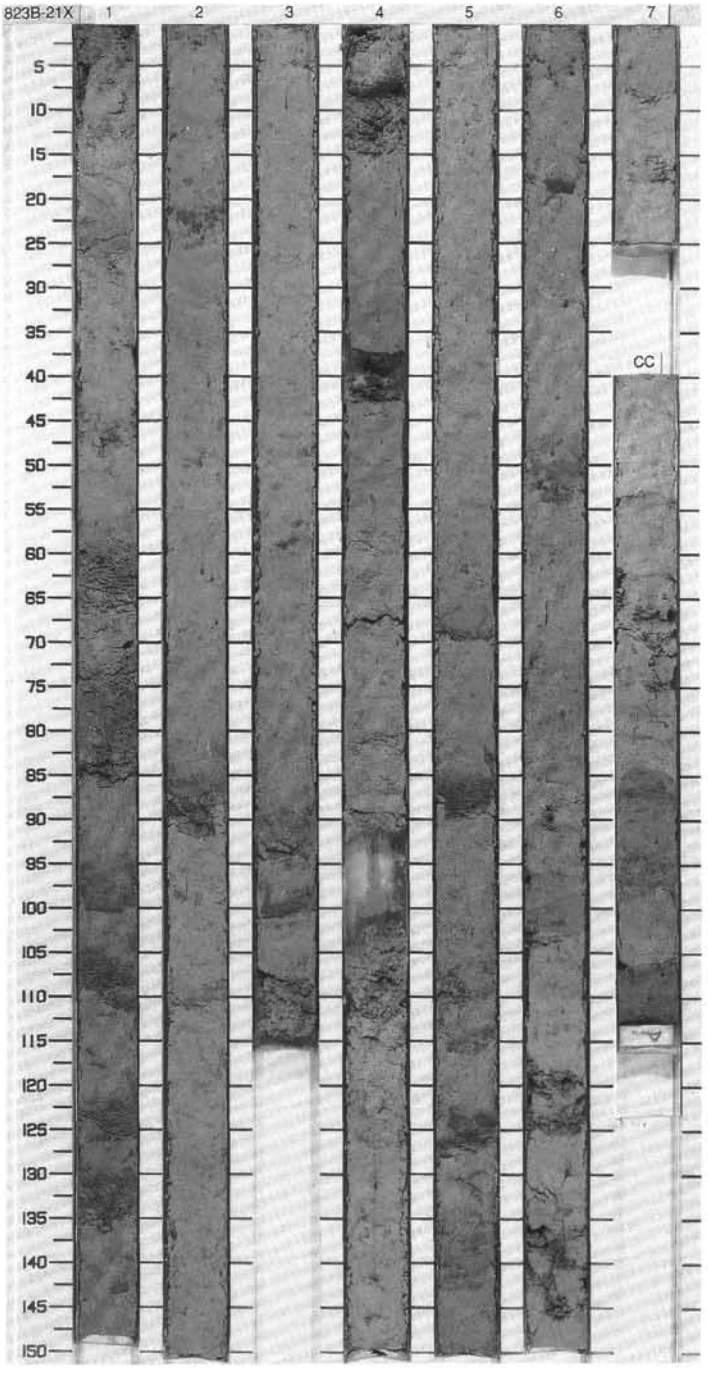
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G N22 - N23	A/G CN12d			N?	● 57.7% 1.83 ● 64.0% 1.73 ● 63.0% 1.81 ● 62.6% 1.86 ● 55.6% 1.88 ● 57.5% 1.81	● 62.9% ● 61.3% ● 63.6% ● 67.8%	1 2 3 4 5 6 7 CC	0.5 1.0	VOID			OG TW PAL

LITHOLOGIC DESCRIPTION

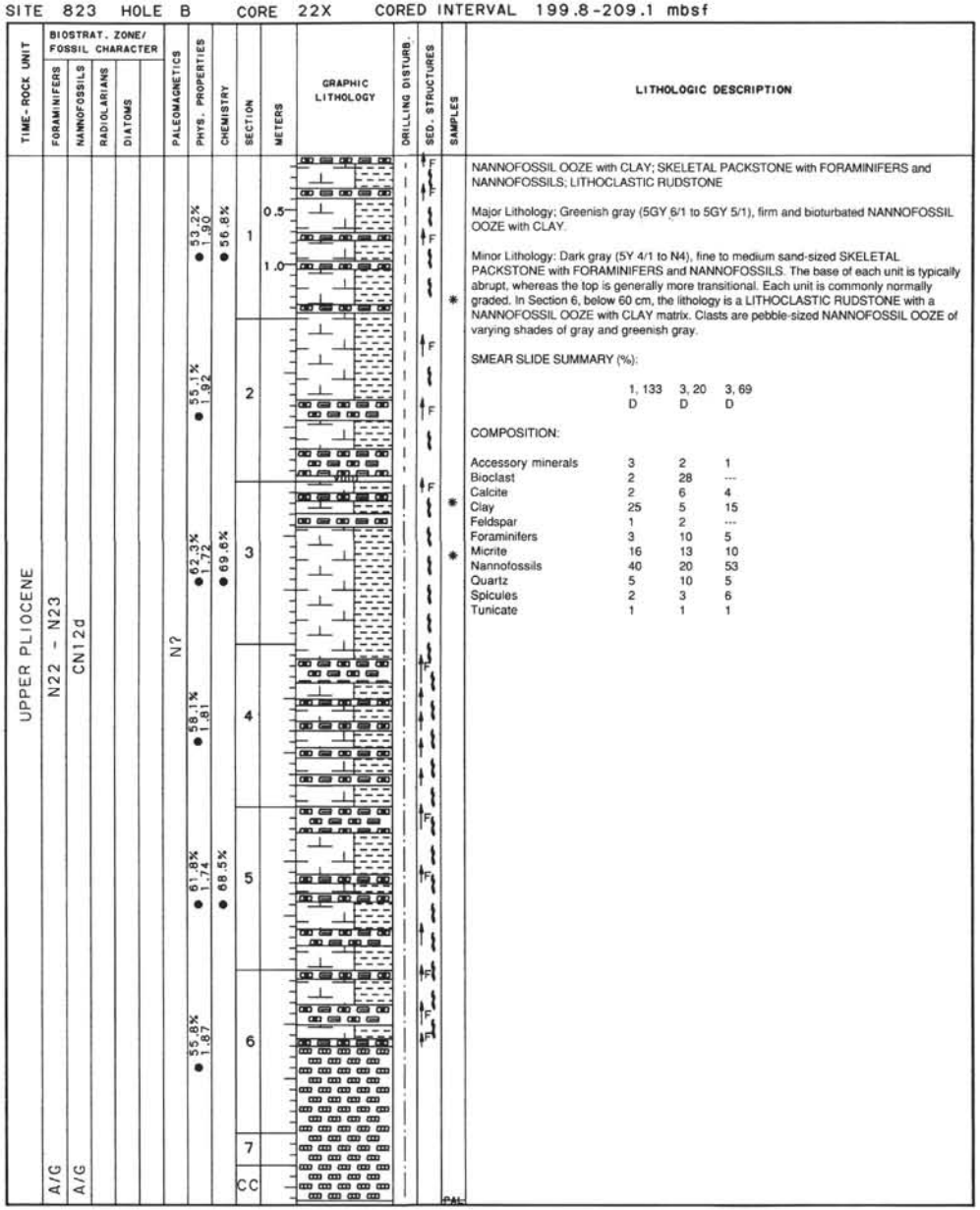
NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated, NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

Minor Lithology: Gray (5Y 5/1), sand-sized, SKELETAL PACKSTONE with FORAMINIFERS - some are pyritic.



SITE 823 HOLE B CORE 22X CORED INTERVAL 199.8-209.1 mbsf



LITHOLOGIC DESCRIPTION

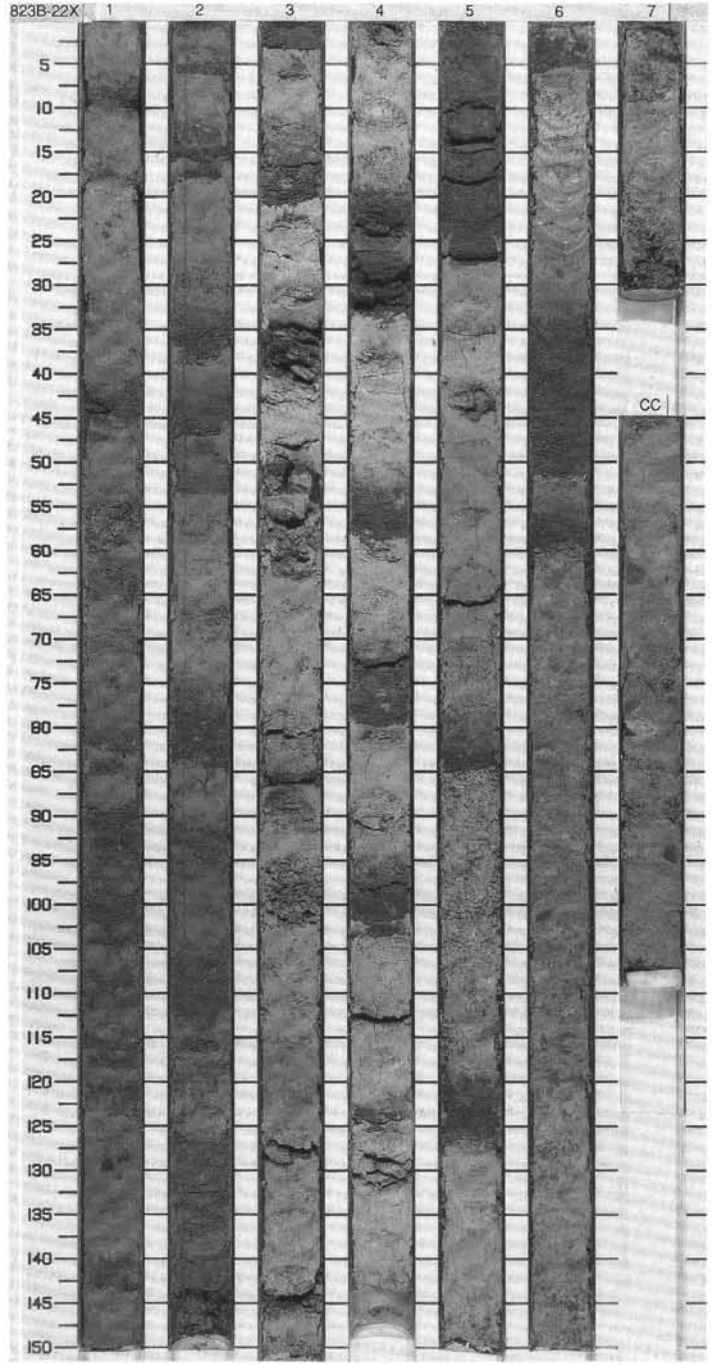
NANNOFOSSIL OOZE with CLAY; SKELETAL PACKSTONE with FORAMINIFERS and NANNOFOSSILS; LITHOCLASTIC RUDSTONE

Major Lithology: Greenish gray (5GY 6/1 to 5GY 5/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY.

Minor Lithology: Dark gray (5Y 4/1 to N4), fine to medium sand-sized SKELETAL PACKSTONE with FORAMINIFERS and NANNOFOSSILS. The base of each unit is typically abrupt, whereas the top is generally more transitional. Each unit is commonly normally graded. In Section 6, below 60 cm, the lithology is a LITHOCLASTIC RUDSTONE with a NANNOFOSSIL OOZE with CLAY matrix. Clasts are pebble-sized NANNOFOSSIL OOZE of varying shades of gray and greenish gray.

SMEAR SLIDE SUMMARY (%):

	1, 133 D	3, 20 D	3, 69 D
COMPOSITION:			
Accessory minerals	3	2	1
Bioclast	2	28	---
Calcite	2	6	4
Clay	25	5	15
Feldspar	1	2	---
Foraminifers	3	10	5
Micrite	16	13	10
Nannofossils	40	20	53
Quartz	5	10	5
Spicules	2	3	6
Tunicate	1	1	1



SITE 823 HOLE B CORE 23X CORED INTERVAL 209.1-218.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G N22 - N23	A/G CN12d			N?	● 57.6% 1.78 ● 55.5% 1.83 ● 51.7% 1.94 ● 54.2% 1.86 ● 55.5% 1.83 ● 53.5% 1.86	● 68.1% ● 62.3% ● 65.1%	1 2 3 4 5 6 CC	0.5 1.0	VOID		F F	*

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

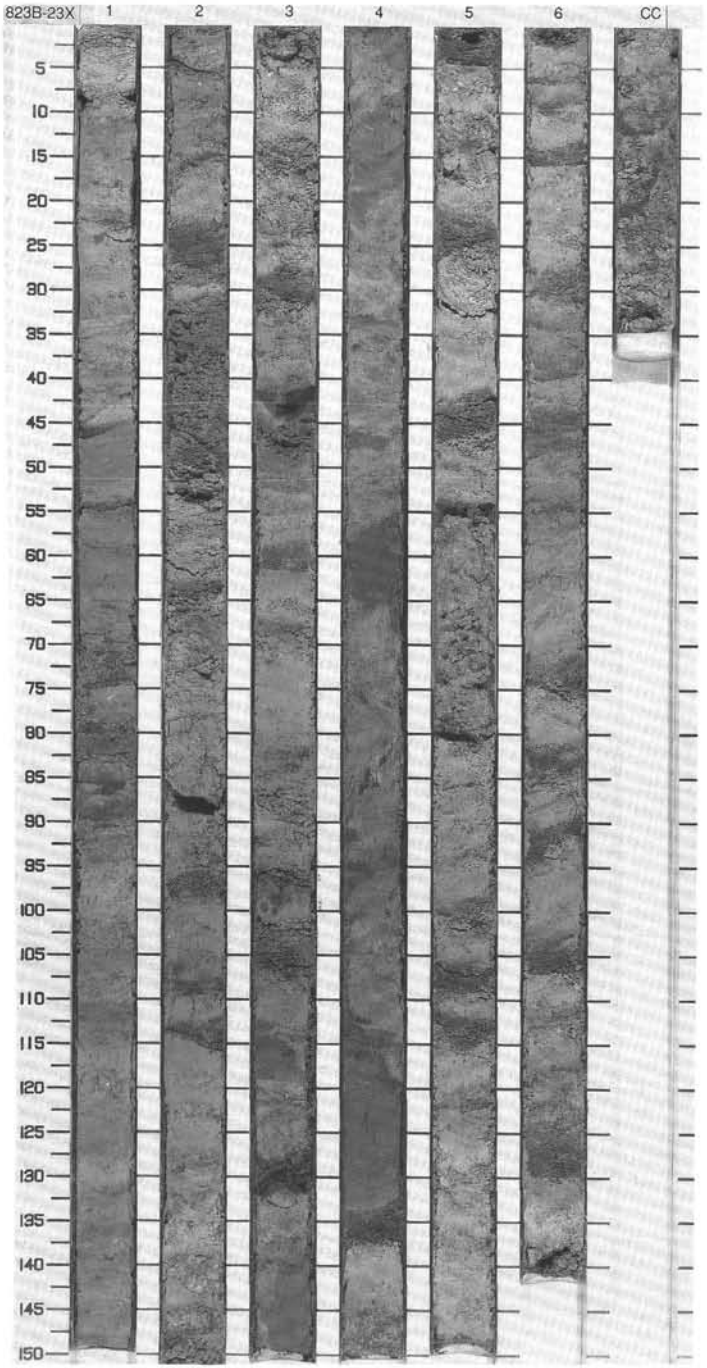
Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated, NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

Minor Lithology: Gray (5Y 5/1) to dark greenish gray (5GY 4/1) sand-sized SKELETAL PACKSTONE with FORAMINIFERS beds, some showing normal grading.

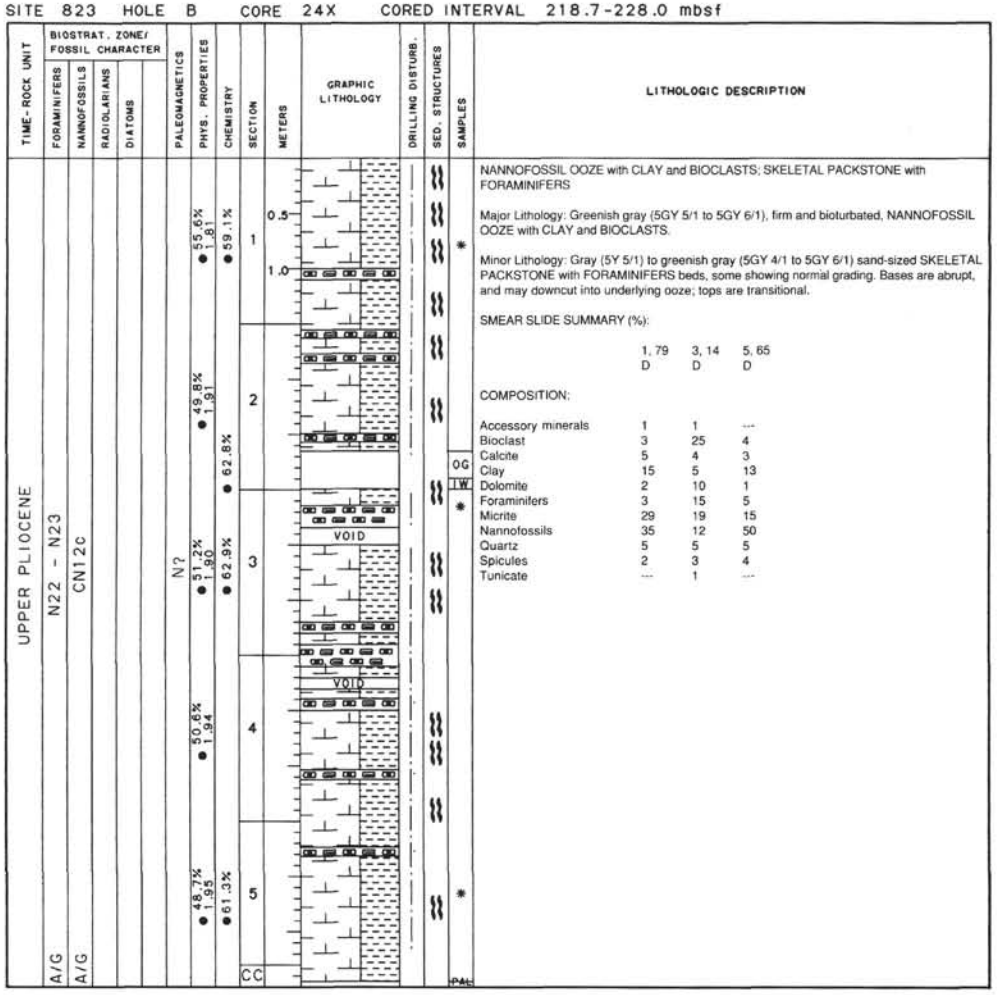
Note: Section 4 and the lower part of Section 3 contain contorted, disrupted beds of OOZE and PACKSTONE, and possible cobble-sized (and coarser?) blocks of NANNOFOSSIL OOZE.

SMEAR SLIDE SUMMARY (%):

	1, 56 D	4, 122 D
COMPOSITION:		
Accessory minerals	---	2
Bioclast	4	2
Calcite	5	---
Clay	25	45
Dolomite	Tr	---
Feldspar	---	2
Foraminifers	3	3
Micrite	12	12
Nannofossils	40	20
Quartz	4	12
Spicules	5	2
Tunicate	1	---



SITE 823 HOLE B CORE 24X CORED INTERVAL 218.7-228.0 mbsf



LITHOLOGIC DESCRIPTION

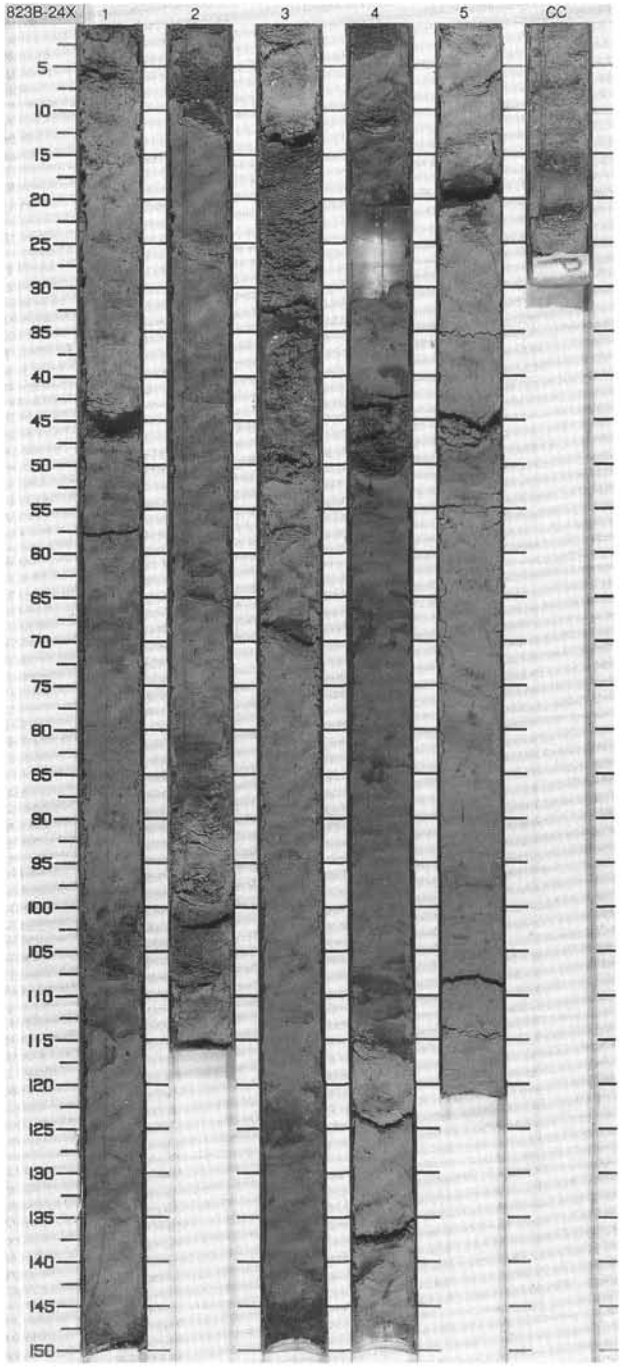
NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated, NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

Minor Lithology: Gray (5Y 5/1) to greenish gray (5GY 4/1 to 5GY 6/1) sand-sized SKELETAL PACKSTONE with FORAMINIFERS beds, some showing normal grading. Bases are abrupt, and may downcut into underlying ooze; tops are transitional.

SMEAR SLIDE SUMMARY (%):

	1, 79 D	3, 14 D	5, 65 D
COMPOSITION:			
Accessory minerals	1	1	---
Bioclast	3	25	4
Calcite	5	4	3
Clay	15	5	13
Dolomite	2	10	1
Foraminifers	3	15	5
Micrite	29	19	15
Nannofossils	35	12	50
Quartz	5	5	5
Spicules	2	3	4
Tunicate	---	1	---



SITE 823 HOLE B CORE 25X CORED INTERVAL 228.0-237.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G N22 - N23	A/G CN12b			N?	● 54.6% 1.86 ● 52.1% 1.87 ● 60.8% 1.75 ● 52.3% 1.87 ● 67.2% 1.71 ● 57.1% 1.78	● 35.9% ● 36.8% ● 55.6%	1 2 3 4 5 6 7 CC	0.5 1.0	VOID VOID			

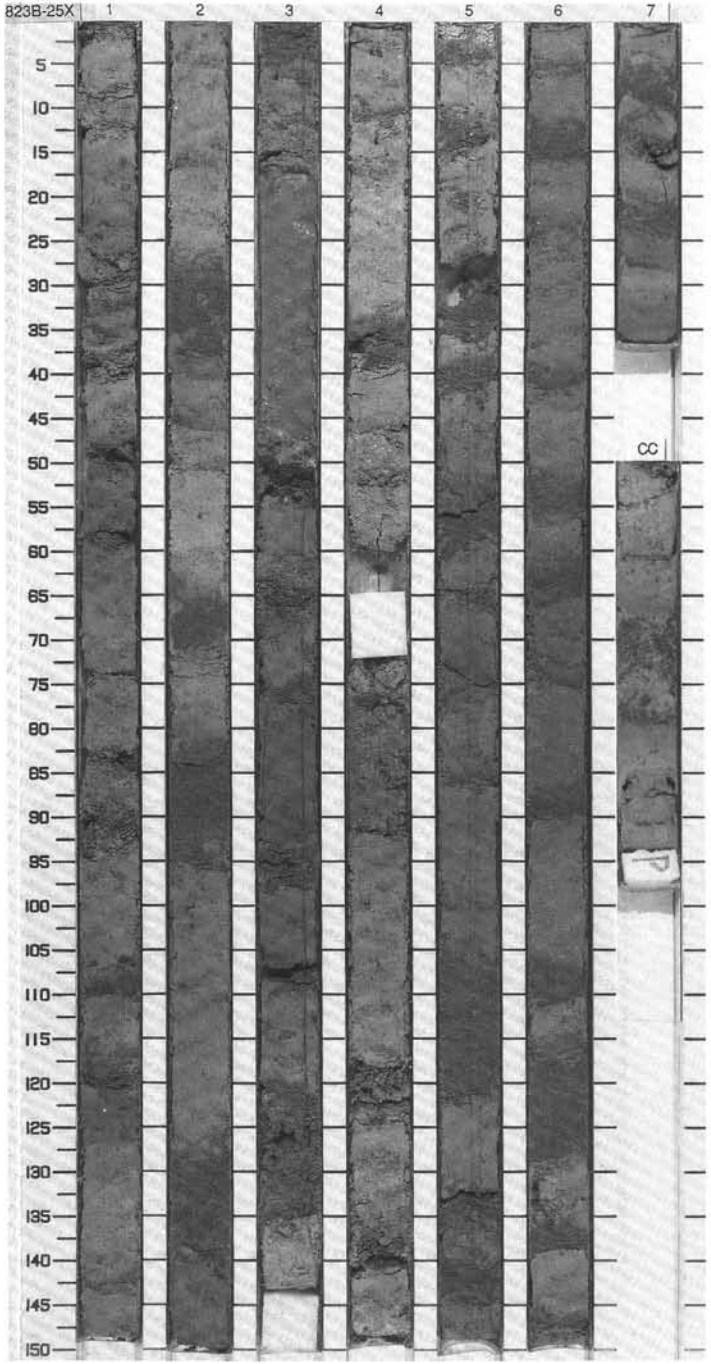
NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

Minor Lithology: Gray (5Y 5/1) to greenish gray (5GY 4/1 to 5GY 6/1), sand-sized, SKELETAL PACKSTONE with FORAMINIFERS beds, commonly showing normal grading. Bases are abrupt and tops are transitional.

SMEAR SLIDE SUMMARY (%):

	2, 32 D	5, 1 D	6, 85 D
COMPOSITION:			
Accessory minerals	2	---	1
Bioclast	26	20	38
Calcite	6	13	5
Clay	5	---	3
Dolomite	2	Tr	Tr
Feldspar	---	---	1
Foraminifers	10	3	12
Micrite	15	8	10
Nannofossils	13	45	15
Quartz	17	4	12
Spicules	1	3	2
Tunicate	1	2	1



SITE 823 HOLE B CORE 26X CORED INTERVAL 237.7-247.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G	A/G			N?	● 55.1% 1.81 ● 61.0% 1.71 ● 61.2% 1.74 ● 57.1% 1.81 ● 61.3% 1.75 ● 56.6% 1.79	● 65.1% ● 62.1% ● 45.5%	1 2 3 4 5 6 7 CC	0.5 1.0			F F F	* * * PAL

N22 - N23
CN12a

LITHOLOGIC DESCRIPTION

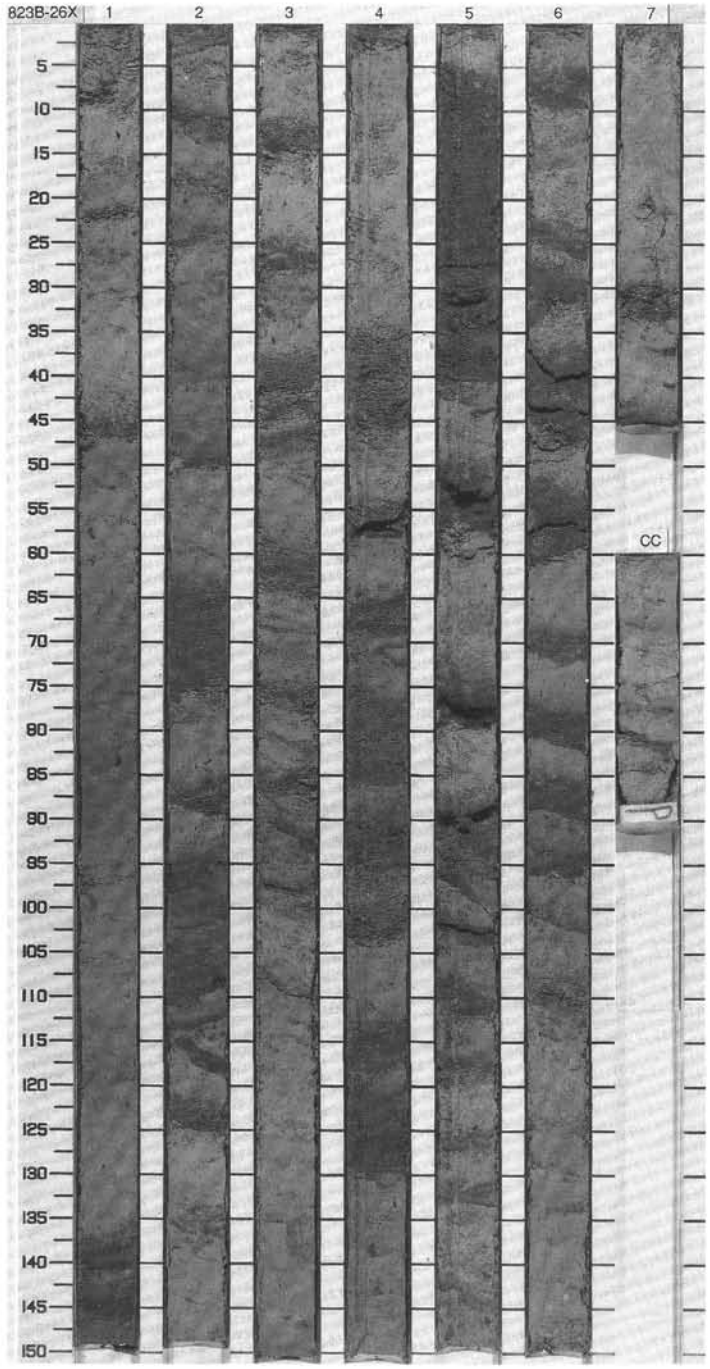
NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

Minor Lithology: Gray (5Y 5/1 to 5Y 4/1) to greenish gray (5GY 4/1 to 5GY 6/1) sand-sized SKELETAL PACKSTONE with FORAMINIFERS, commonly showing normal grading. Bases are abrupt and tops are transitional.

SMEAR SLIDE SUMMARY (%):

	1, 83 D	5, 38 D	5, 64 D
COMPOSITION:			
Bioclast	3	30	3
Calcite	3	4	2
Clay	15	5	15
Dolomite	---	Tr	---
Feldspar	1	2	---
Foraminifers	4	10	5
Micrite	20	8	8
Nannofossils	40	17	60
Quartz	9	15	2
Spicules	3	4	3
Tunicate	1	1	1



SITE 823 HOLE B CORE 27X CORED INTERVAL 247.3-257.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	N22 - N23	CN12a			N?	● 32.9% 1.92 ● 61.6% ● 55.6% 1.84 ● 67.5% ● 55.4% 1.87 ● 60.1% ● 54.6% 1.88 ● 62.2% ● 54.6% 1.88 ● 53.4% 1.87		1 2 3 4 5 6 7 CC	0.5 1.0	VOID VOID			LW PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

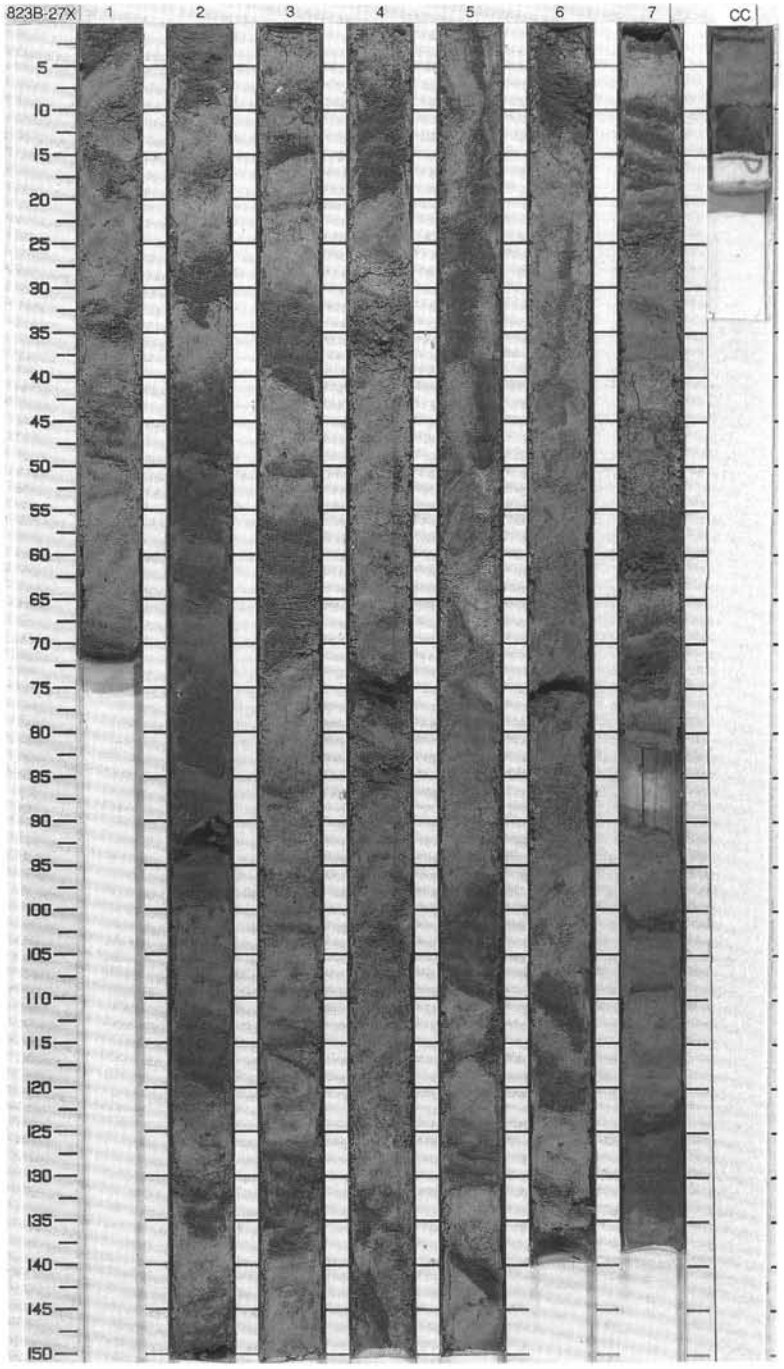
Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

Minor Lithology: Gray (5Y 5/1 to 5Y 4/1) to greenish gray (5GY 4/1 to 5GY 6/1) sand-sized SKELETAL PACKSTONE with FORAMINIFERS, commonly showing normal grading. Bases are abrupt and tops are transitional.

Note: Section 5 and 6, to 40 cm, both contain complex, disrupted bedding, small to interpreted larger folds (extending beyond the axis of the core); lithologies as above.

SMEAR SLIDE SUMMARY (%):

	3, 40 D	5, 111 D
COMPOSITION:		
Accessory minerals	---	2
Bioclast	32	30
Calcite	4	5
Clay	5	5
Dolomite	Tr	---
Feldspar	2	2
Foraminifers	8	12
Micrite	10	15
Nannofossils	20	12
Quartz	13	13
Spicules	4	3
Tunicate	1	1



SITE 823 HOLE B CORE 28X CORED INTERVAL 257.0-266.7 mbsf

TIME-ROCK UNIT: UPPER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: N22 - N23 (A/G); NANNOFOSSILS: CN12a (A/G); RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N?

PHYS. PROPERTIES: ● 59.6% 1.74; ● 56.5% 1.82; ● 55.0% 1.86; ● 57.0% 1.83; ● 55.1% 1.81; ● 55.2% 1.85

CHEMISTRY: ● 61.8%; ● 63.5%; ● 61.1%

SECTION: 1, 2, 3, 4, 5, 6, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY: VOID

DRILLING DISTURB.

SED. STRUCTURES: F, F

SAMPLES: *, **, *, PAL

LITHOLOGIC DESCRIPTION

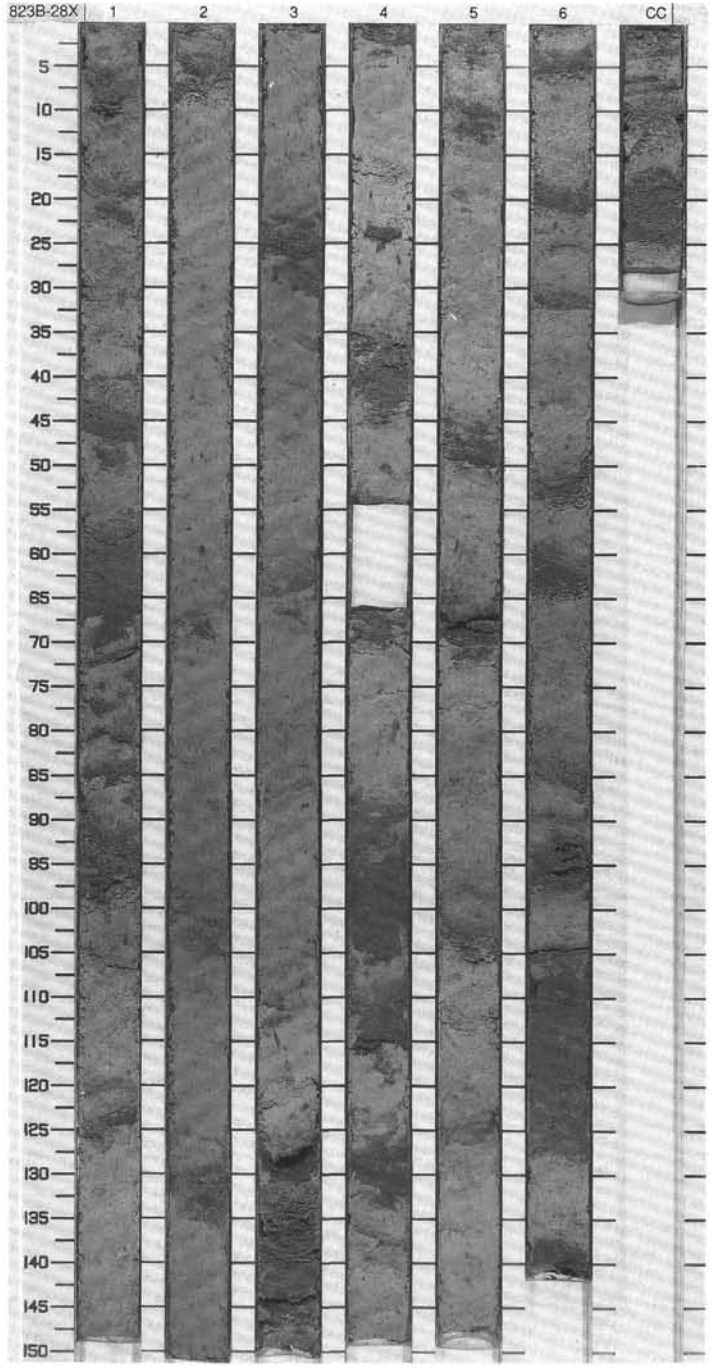
NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 6/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

Minor Lithology: Gray (5Y 5/1 to 5Y 4/1) to greenish gray (5GY 4/1 to 5GY 6/1) fine- to medium sand-sized SKELETAL PACKSTONE with FORAMINIFERS, commonly showing normal grading. Bases are abrupt and tops are transitional.

SMEAR SLIDE SUMMARY (%):

	1, 62 D	3, 75 D	3, 77 D	6, 50 D
COMPOSITION:				
Accessory minerals	---	2	---	2
Apatite	Tr	---	---	---
Bioclast	35	15	8	25
Calcite	---	1	1	5
Clay	---	15	30	5
Dolomite	7	---	---	10
Feldspar	---	1	---	---
Foraminifers	24	13	10	18
Micrite	---	---	---	12
Nannofossils	20	25	42	13
Quartz	6	13	4	8
Rock fragment	4	15	---	---
Spicules	4	---	5	2



SITE 823 HOLE B CORE 29X CORED INTERVAL 266.7-276.3 mbsf

TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	N21	CN12a			N?	• 54.1% 1.82	• 58.1%	1	0.5, 1.0				
						• 57.4% 1.81		2					
						• 56.7% 1.83	• 59.1%	3					
						• 57.0% 1.82		4					
						• 60.1% 1.73	• 66.2%	5		VOID			
						• 58.6% 1.80		6					
	A/G	A/G						CC					PAL

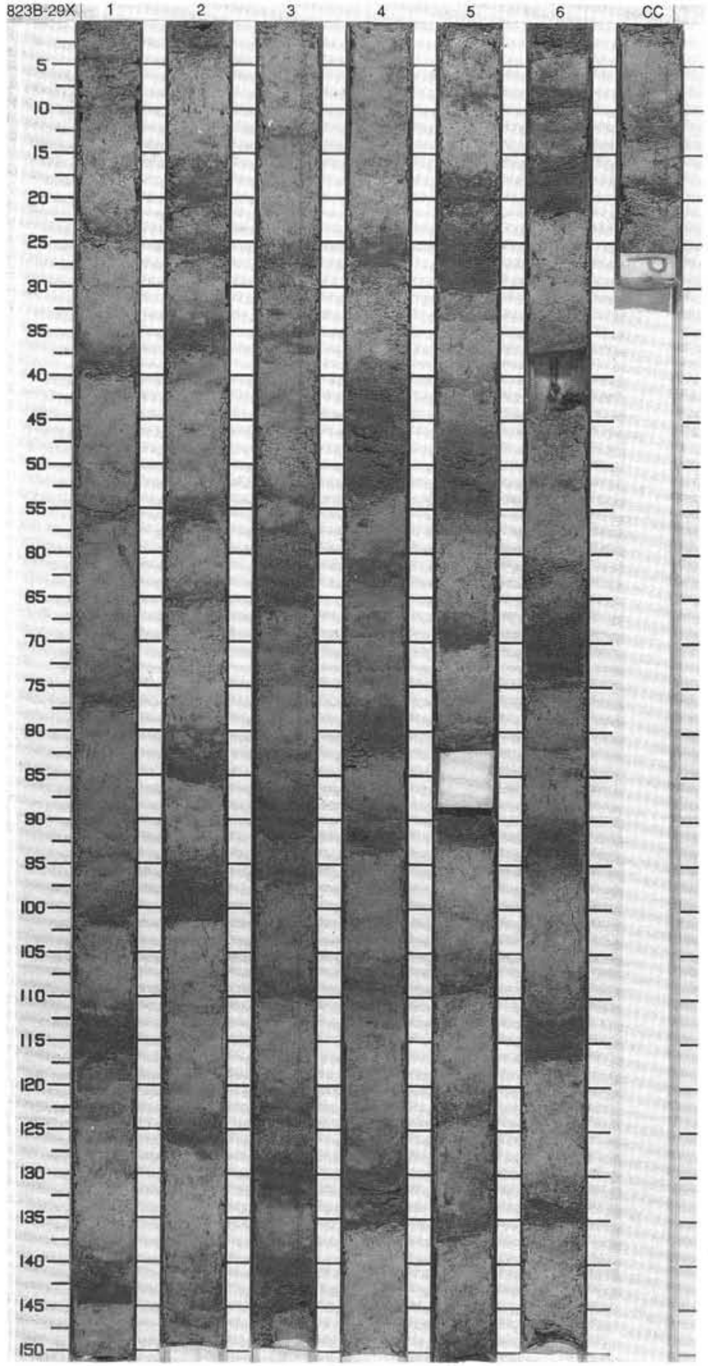
BIOSTRAT. ZONE/ FOSSIL CHARACTER

LITHOLOGIC DESCRIPTION

NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1 to 5GY 7/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY and BIOCLASTS.

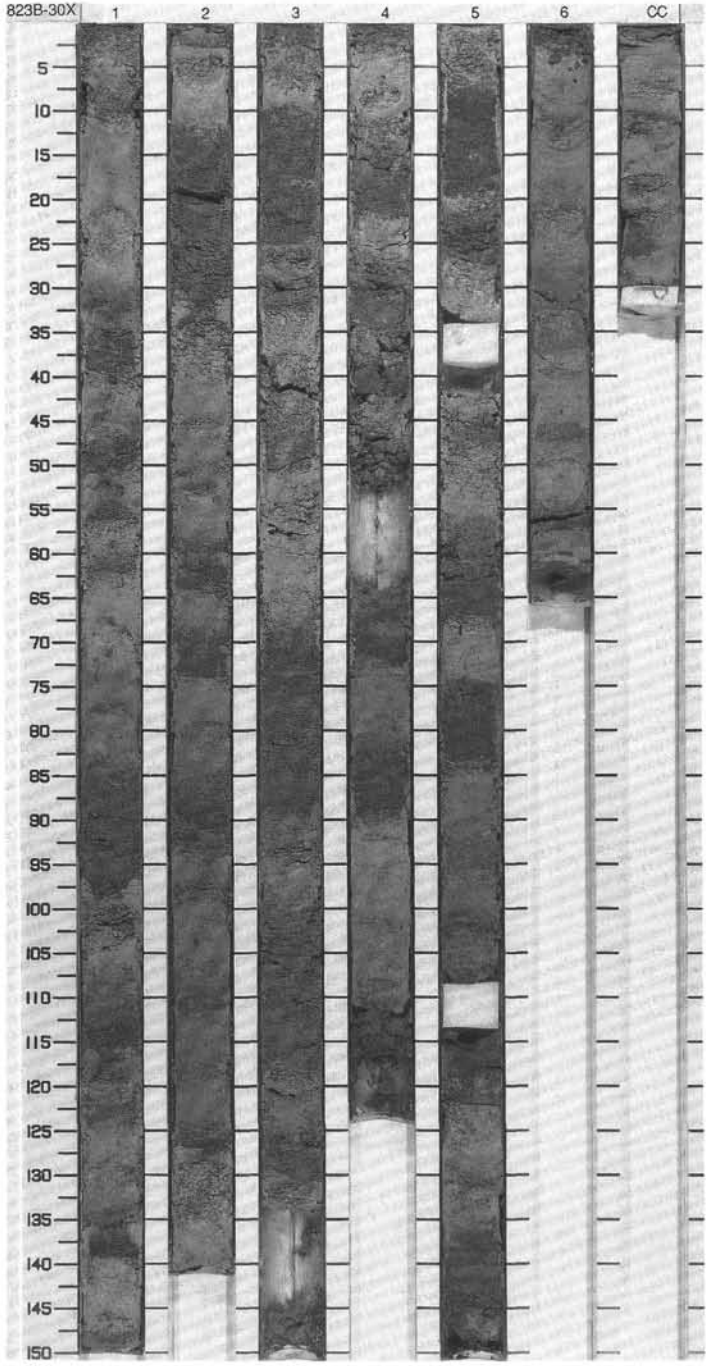
Minor Lithology: Gray (5Y 5/1 to 5Y 4/1) to greenish gray (5GY 4/1 to 5GY 6/1) fine- to medium sand-sized SKELETAL PACKSTONE with FORAMINIFERS, commonly showing normal grading. Bases are abrupt and tops are transitional.



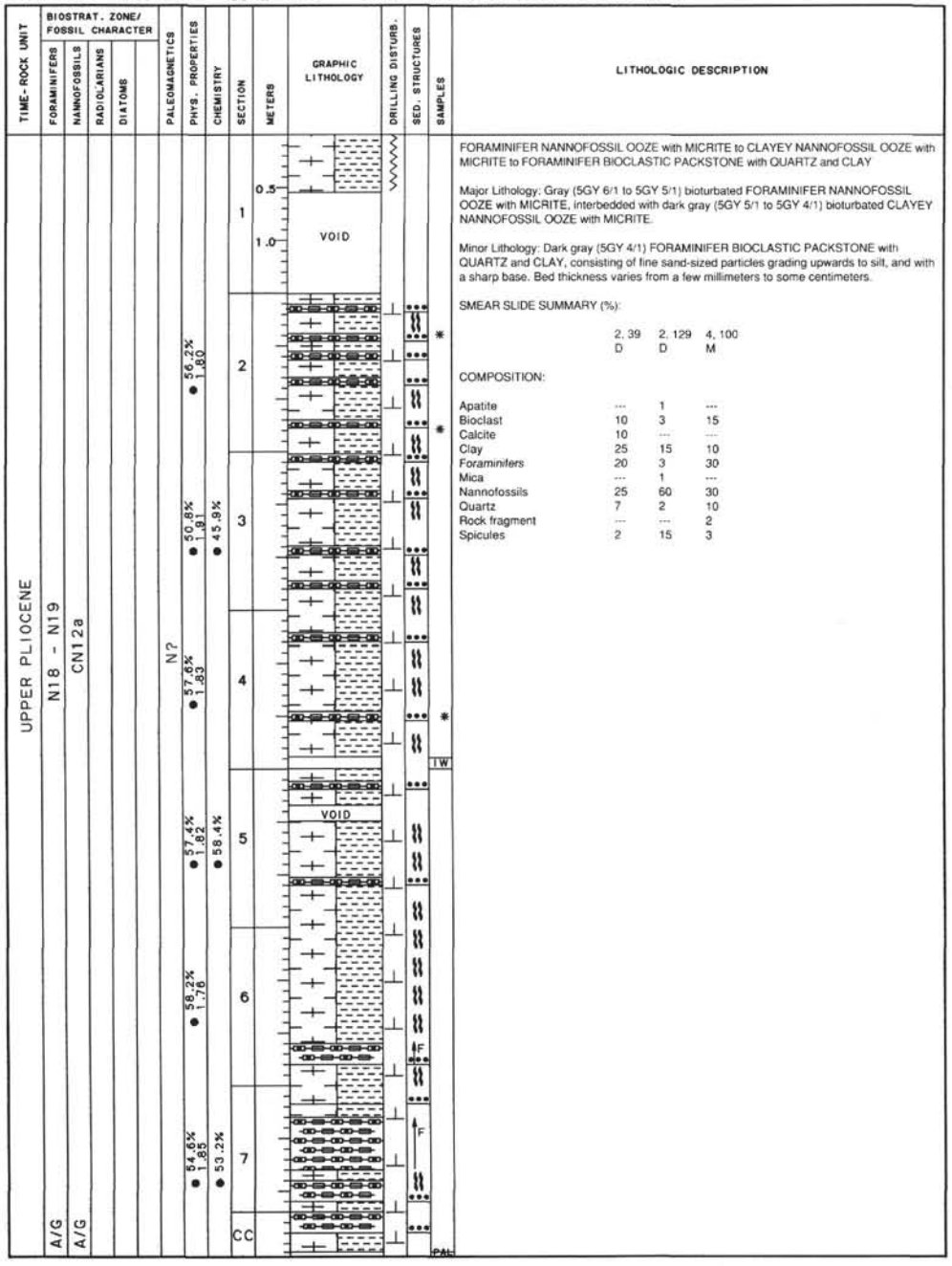
SITE 823 HOLE B CORE 30X CORED INTERVAL 276.3-286.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER PLIOCENE	A/G	N21			N?	● 61.8% 1.74	● 68.1%	1	0.5			F	* □*	NANNOFOSSIL OOZE with CLAY and BIOCLASTS; SKELETAL PACKSTONE with FORAMINIFERS
	A/G	CN12a							1.0					Major Lithology: Greenish gray (5GY 5/1 to 5GY 7/1), firm and bioturbated NANNOFOSSIL OOZE with CLAY and BIOCLASTS. FORAMINIFER abundance varies considerably. Color becomes dark greenish gray (5GY 4/1) in Section 6.
						● 56.8% 1.83		2		VOID		C		Minor Lithology: Gray (5Y 5/1 to 5Y 4/1) to greenish gray (5GY 4/1 to 5GY 6/1) fine- to medium sand-sized SKELETAL PACKSTONE with FORAMINIFERS, commonly showing normal grading. Bases are abrupt and tops are transitional.
							● 58.6%							
						● 50.0% 1.73	● 59.1%	3				F F F		SMEAR SLIDE SUMMARY (%):
						● 56.4% 1.84		4		VOID			JW	
					● 56.1% 1.84		● 50.9%	5		VOID			OG	
								6						
								CC					PAL	

	1, 86 D	1, 96 D	CF 1, 96 D
COMPOSITION:			
Bioclast	15	25	20
Calcite	Tr	Tr	---
Clay	30	20	---
Foraminifers	10	25	74
Glauconite	---	---	4
Mica	---	---	1
Nannofossils	36	21	---
Quartz	5	5	---
Rock fragment	---	---	1
Spicules	4	4	---



SITE 823 HOLE B CORE 31X CORED INTERVAL 286.0-295.6 mbsf



LITHOLOGIC DESCRIPTION

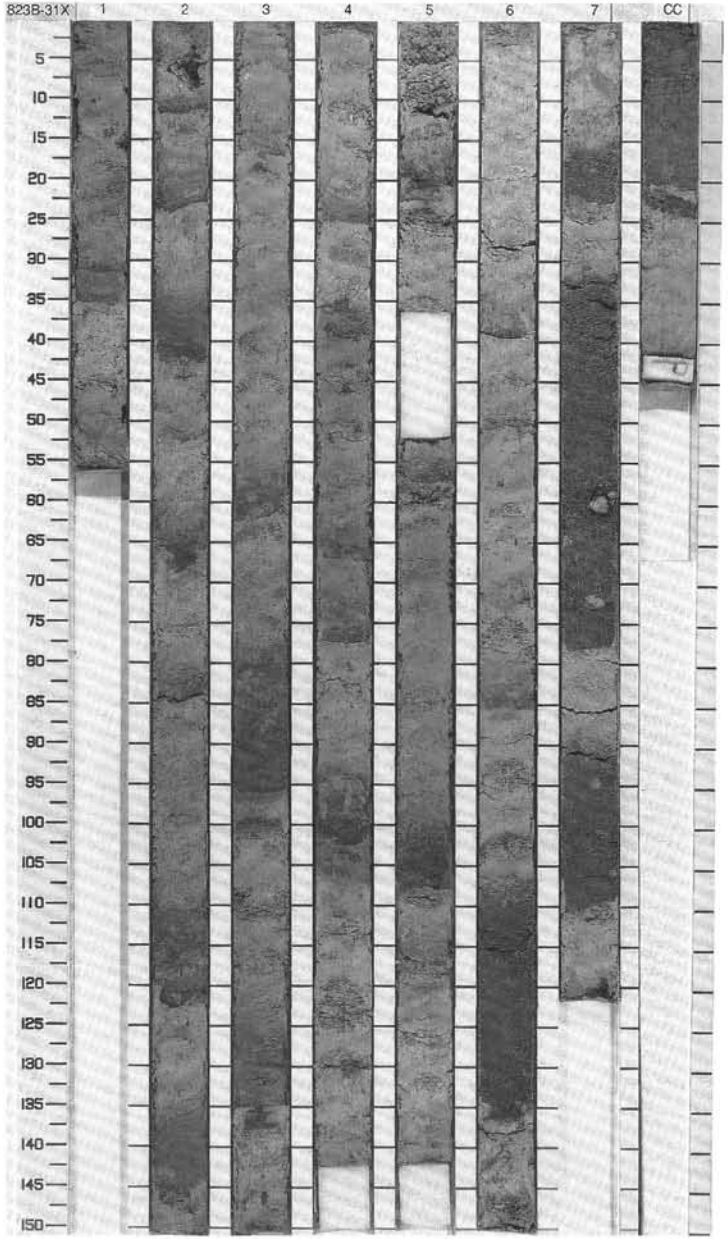
FORAMINIFER NANNOFOSSIL OOZE with MICRITE to CLAYEY NANNOFOSSIL OOZE with MICRITE to FORAMINIFER BIOCLASTIC PACKSTONE with QUARTZ and CLAY

Major Lithology: Gray (5GY 6/1 to 5GY 5/1) bioturbated FORAMINIFER NANNOFOSSIL OOZE with MICRITE, interbedded with dark gray (5GY 5/1 to 5GY 4/1) bioturbated CLAYEY NANNOFOSSIL OOZE with MICRITE.

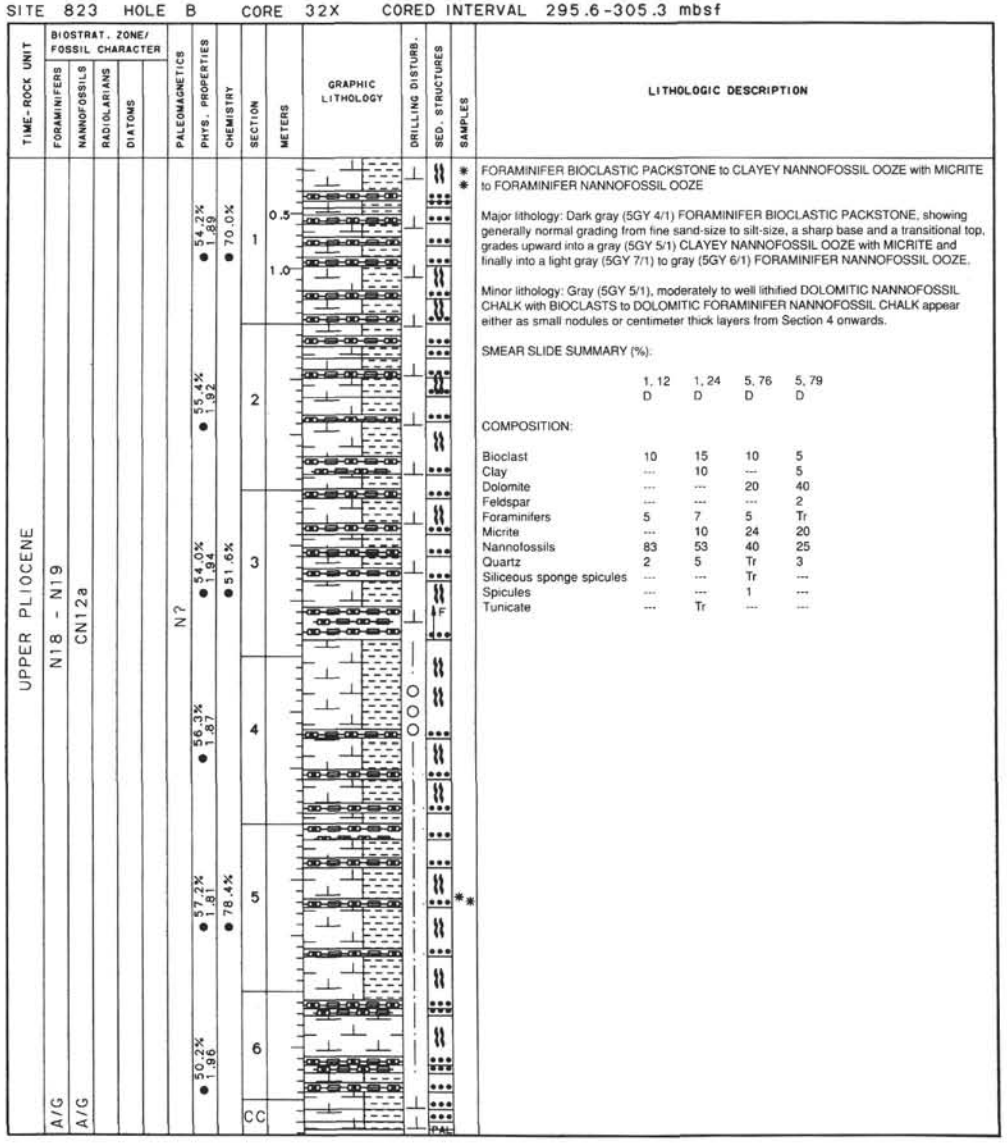
Minor Lithology: Dark gray (5GY 4/1) FORAMINIFER BIOCLASTIC PACKSTONE with QUARTZ and CLAY, consisting of fine sand-sized particles grading upwards to silt, and with a sharp base. Bed thickness varies from a few millimeters to some centimeters.

SMEAR SLIDE SUMMARY (%):

	2, 39 D	2, 129 D	4, 100 M
COMPOSITION:			
Apatite	---	1	---
Bioclast	10	3	15
Calcite	10	---	---
Clay	25	15	10
Foraminifers	20	3	30
Mica	---	1	---
Nannofossils	25	60	30
Quartz	7	2	10
Rock fragment	---	---	2
Spicules	2	15	3



SITE 823 HOLE B CORE 32X CORED INTERVAL 295.6-305.3 mbsf



LITHOLOGIC DESCRIPTION

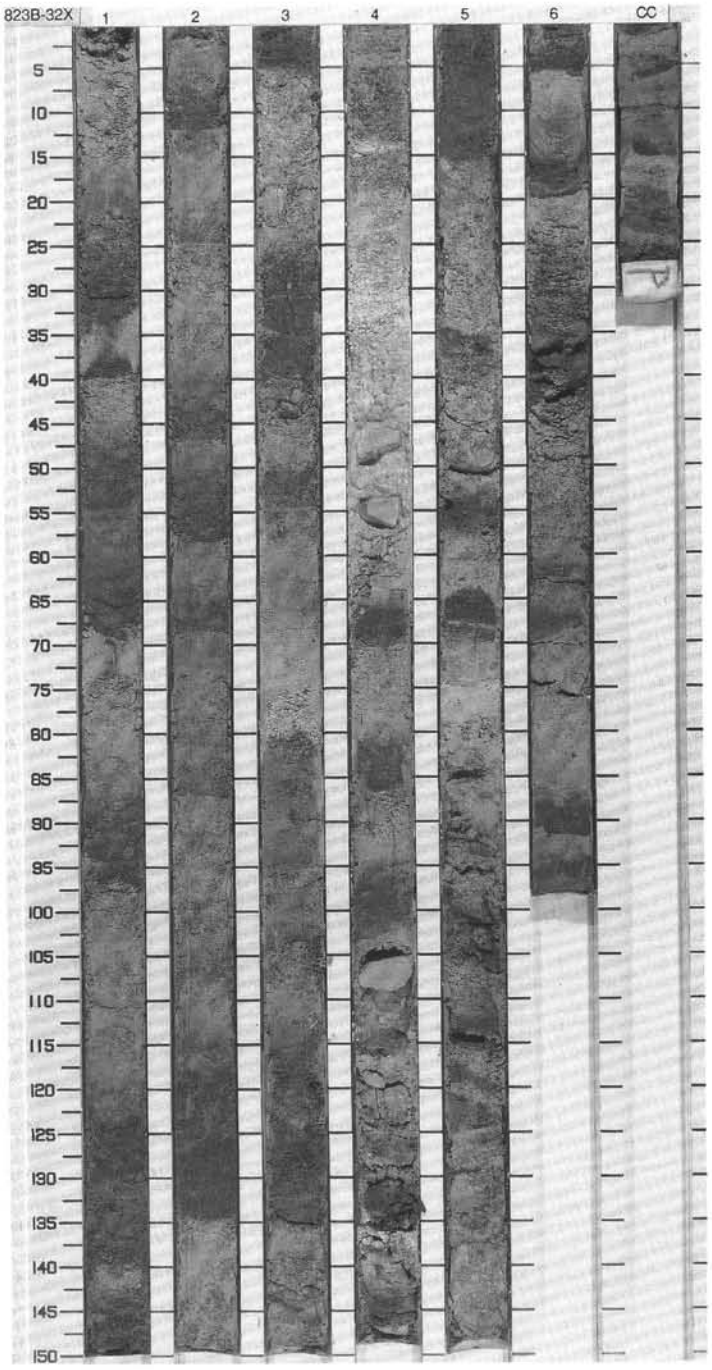
* FORAMINIFER BIOCLASTIC PACKSTONE to CLAYEY NANNOFOSSIL OOZE with MICRITE to FORAMINIFER NANNOFOSSIL OOZE

Major lithology: Dark gray (5GY 4/1) FORAMINIFER BIOCLASTIC PACKSTONE, showing generally normal grading from fine sand-size to silt-size, a sharp base and a transitional top, grades upward into a gray (5GY 5/1) CLAYEY NANNOFOSSIL OOZE with MICRITE and finally into a light gray (5GY 7/1) to gray (5GY 6/1) FORAMINIFER NANNOFOSSIL OOZE.

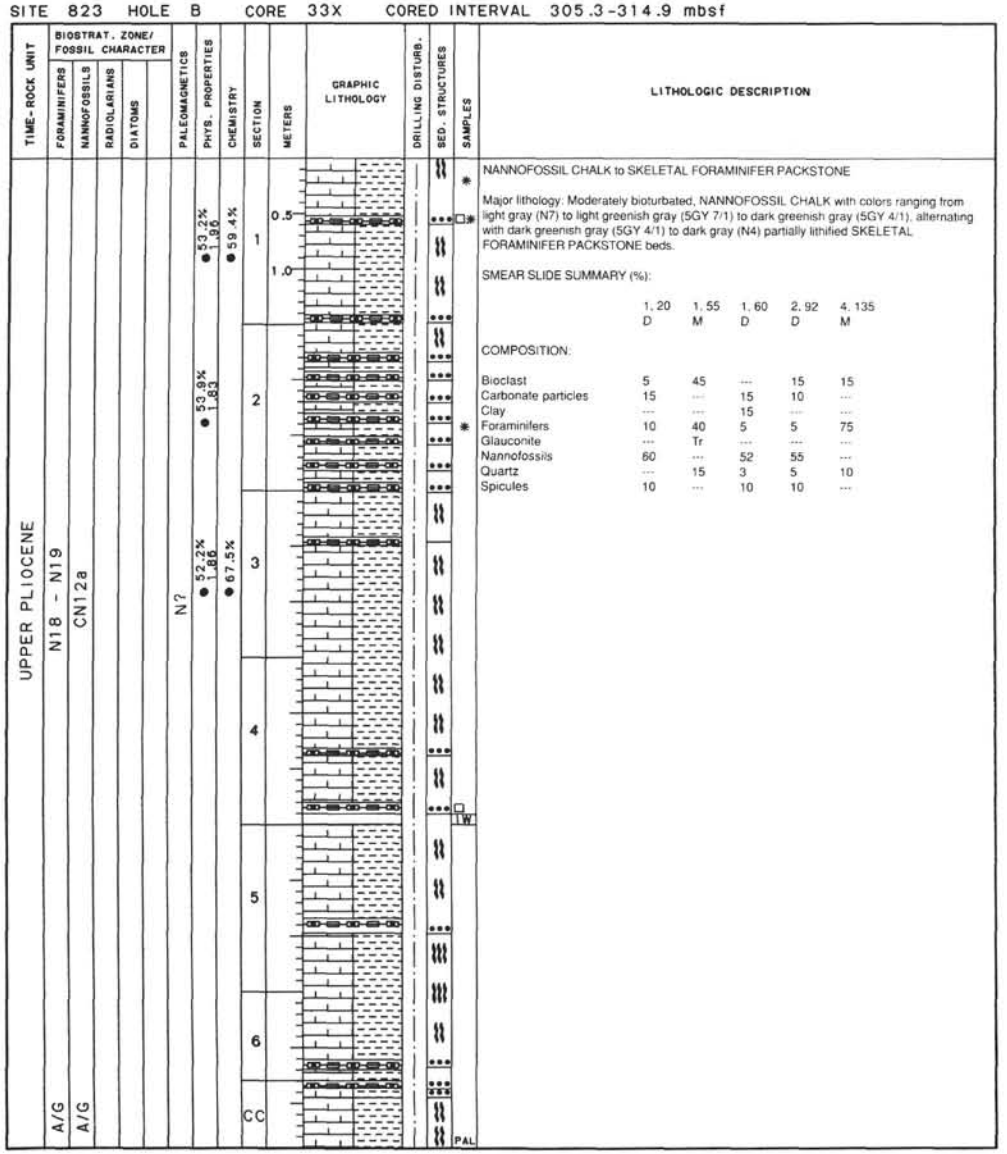
Minor lithology: Gray (5GY 5/1), moderately to well lithified DOLOMITIC NANNOFOSSIL CHALK with BIOCLASTS to DOLOMITIC FORAMINIFER NANNOFOSSIL CHALK appear either as small nodules or centimeter thick layers from Section 4 onwards.

SMEAR SLIDE SUMMARY (%):

	1, 12 D	1, 24 D	5, 76 D	5, 79 D
COMPOSITION:				
Bioclast	10	15	10	5
Clay	---	10	---	5
Dolomite	---	---	20	40
Feldspar	---	---	---	2
Foraminifers	5	7	5	Tr
Micrite	---	10	24	20
Nannofossils	83	53	40	25
Quartz	2	5	Tr	3
Siliceous sponge spicules	---	---	Tr	---
Spicules	---	---	1	---
Tunicate	---	Tr	---	---



SITE 823 HOLE B CORE 33X CORED INTERVAL 305.3-314.9 mbsf

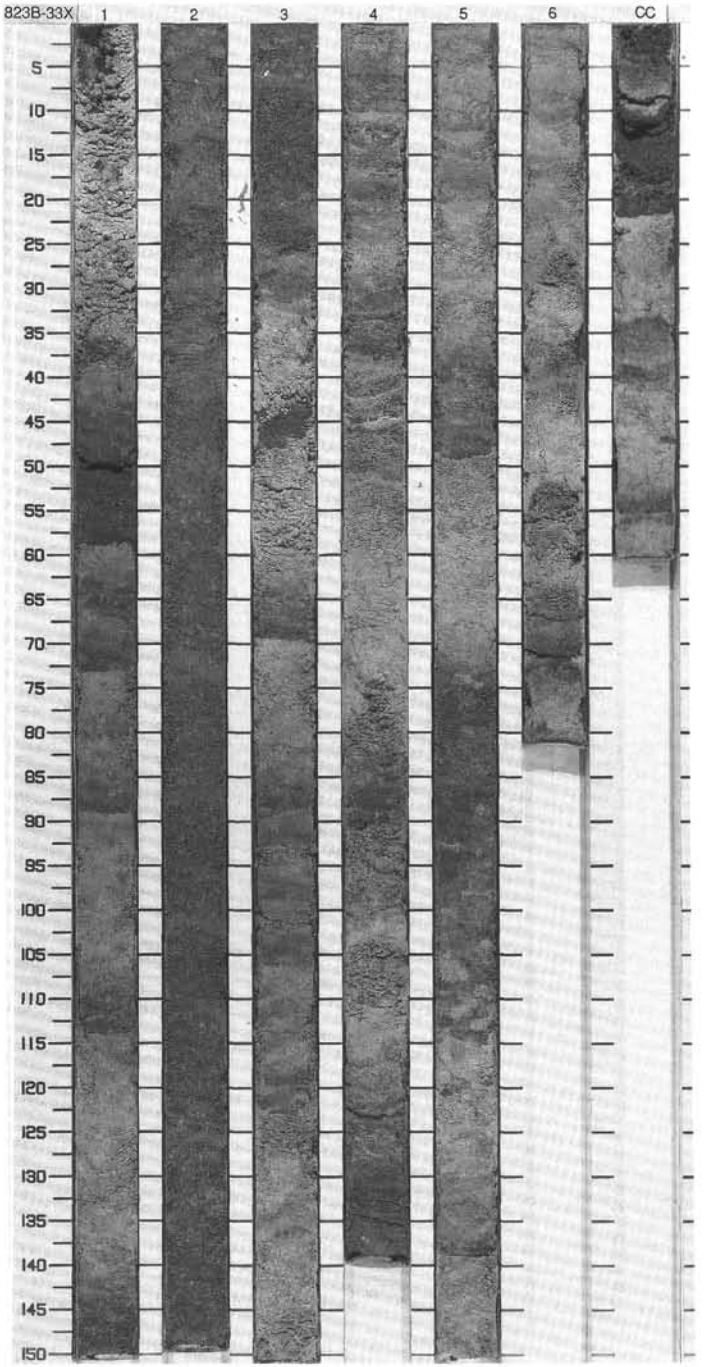


NANNOFOSSIL CHALK to SKELETAL FORAMINIFER PACKSTONE

Major lithology: Moderately bioturbated, NANNOFOSSIL CHALK with colors ranging from light gray (N7) to light greenish gray (5GY 7/1) to dark greenish gray (5GY 4/1), alternating with dark greenish gray (5GY 4/1) to dark gray (N4) partially lithified SKELETAL FORAMINIFER PACKSTONE beds.

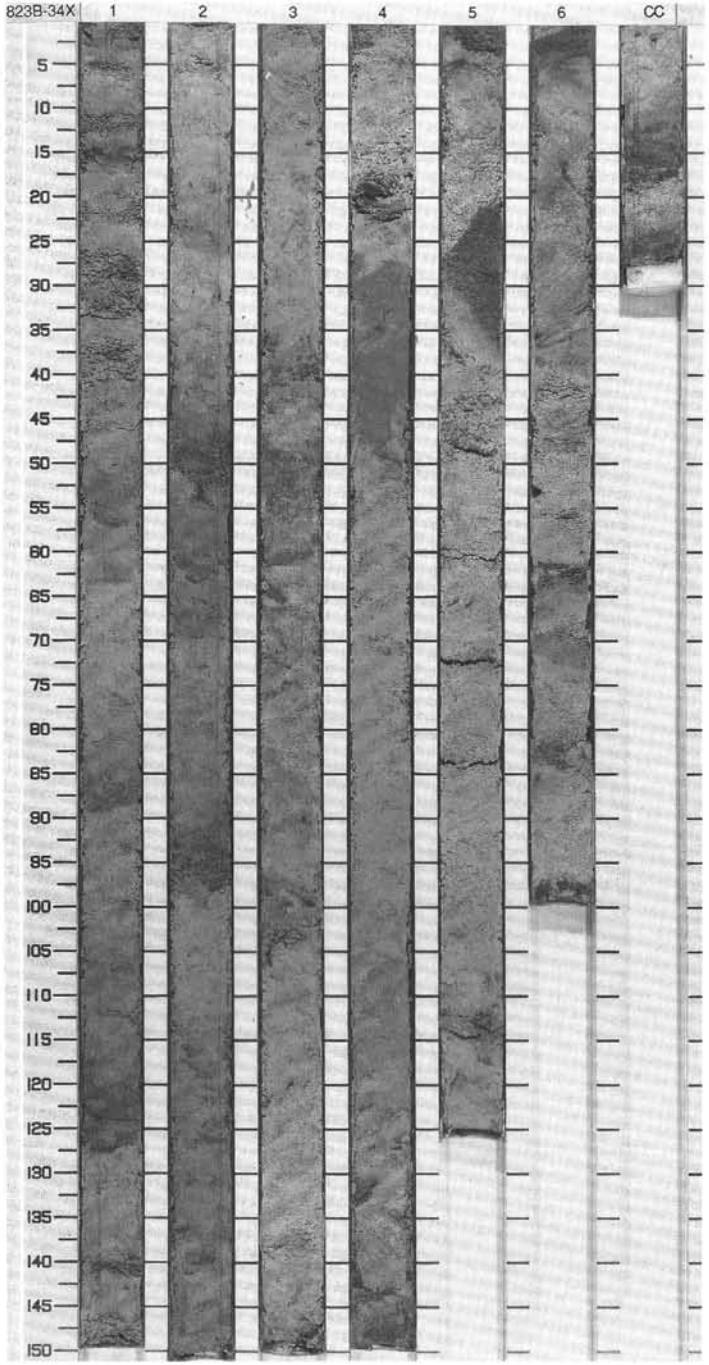
SMEAR SLIDE SUMMARY (%):

	1, 20 D	1, 55 M	1, 60 D	2, 92 D	4, 135 M
COMPOSITION:					
Bioclast	5	45	---	15	15
Carbonate particles	15	---	15	10	---
Clay	---	---	15	---	---
Foraminifers	10	40	5	5	75
Glauconite	---	Tr	---	---	---
Nannofossils	60	---	52	55	---
Quartz	---	15	3	5	10
Spicules	10	---	10	10	---



SITE 823 HOLE B CORE 34X CORED INTERVAL 314.9-324.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER PLIOCENE	A/G	N18 - N19			N?	• 57.9% 1.77 • 52.2% 1.93 • 55.0% 1.87 • 54.3% 1.83 • 56.4% 1.79 • 56.4% 1.82	• 56.7% • 50.4% • 80.4%	1 2 3 4 5 6 CC	0.5 1.0				OG PAL	NANNOFOSSIL CHALK to SKELETAL FORAMINIFER PACKSTONE Major lithology: Light gray (5GY 7/1) to light greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1), moderately bioturbated NANNOFOSSIL CHALK. Minor Lithology: Gray (5GY 5/1) partially lithified SKELETAL FORAMINIFER PACKSTONE. Small slump folds appear in Section 4, at approximately 20 cm, Section 5, around 25 cm and Section 6, at 40 cm.
	A/G	CN12a												



SITE 823 HOLE B CORE 35X CORED INTERVAL 324.6-334.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G N18 - N19	A/G CN12a			N?	● 51.9% 1.92 ● 58.6% 1.84 ● 53.5% 1.95 ● 62.6% 1.75 ● 55.7% 1.83 ● 54.9% 1.99	● 72.6% ● 69.7% ● 58.1%	1 2 3 4 5 6 7 CC	0.5 1.0				PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK to SKELETAL FORAMINIFER PACKSTONE

Major lithology: Light gray (5GY 7/1) to dark greenish gray (5GY 4/1) NANNOFOSSIL CHALK.

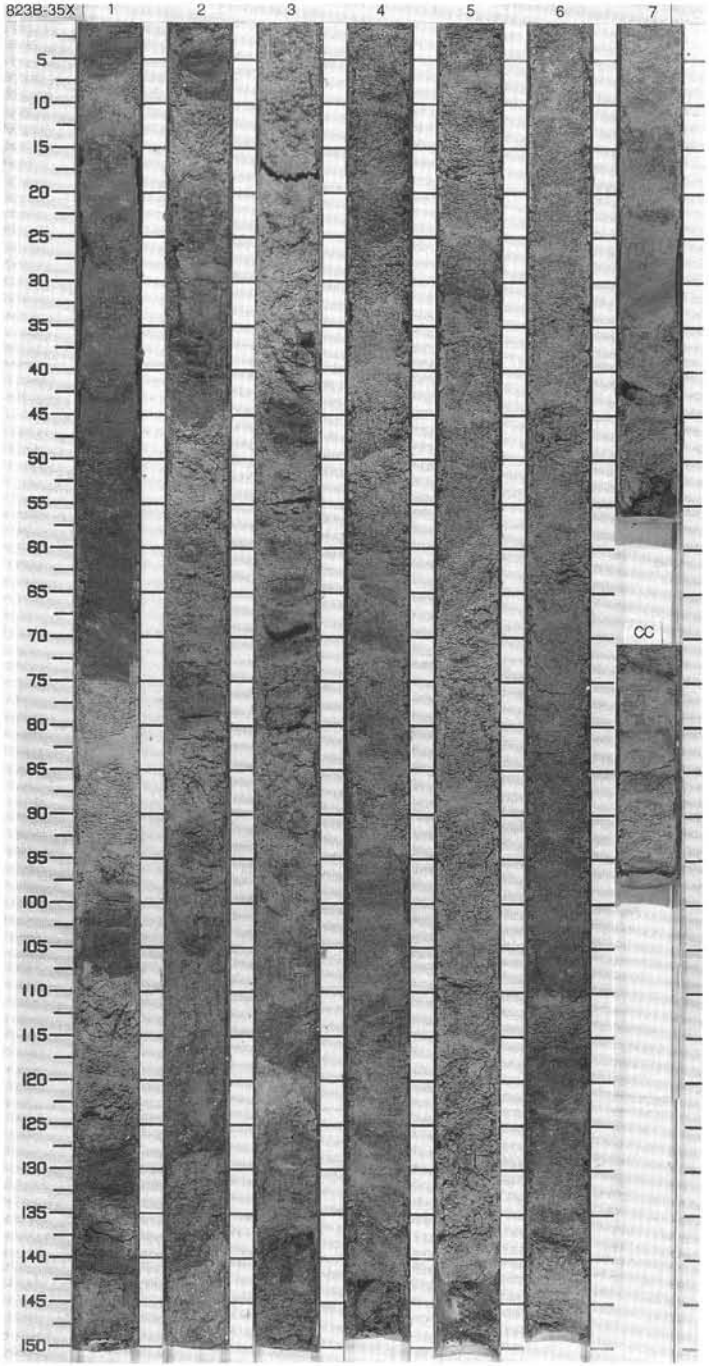
Minor Lithology: Dark gray (5GY 4/1), partially lithified. SKELETAL FORAMINIFER PACKSTONE. These layers generally possess a scoured base and show normal grading from fine sand-size to silt-size. Inclined layers occur at the bottom of Section 4 and in the middle of Section 5.

COARSE FRACTION SUMMARY (%):

	1, 104 M

COMPOSITION:

Bioclast	20
Foraminifers	65
Quartz	15



SITE 823 HOLE B CORE 36X CORED INTERVAL 334.2-343.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G N18 - N19	A/G CN12a			N?	● 64.4% 1.89 ● 64.5% 1.68 ● 56.5% 1.82 ● 55.9% 1.89 ● 60.3% 1.84 ● 51.9% 2.01	65.5% ● ● 60.7% ● 74.3% ● 57.0%	1 2 3 4 5 6 7 CC	0.5 1.0	VOID VOID		*	PAL

LITHOLOGIC DESCRIPTION

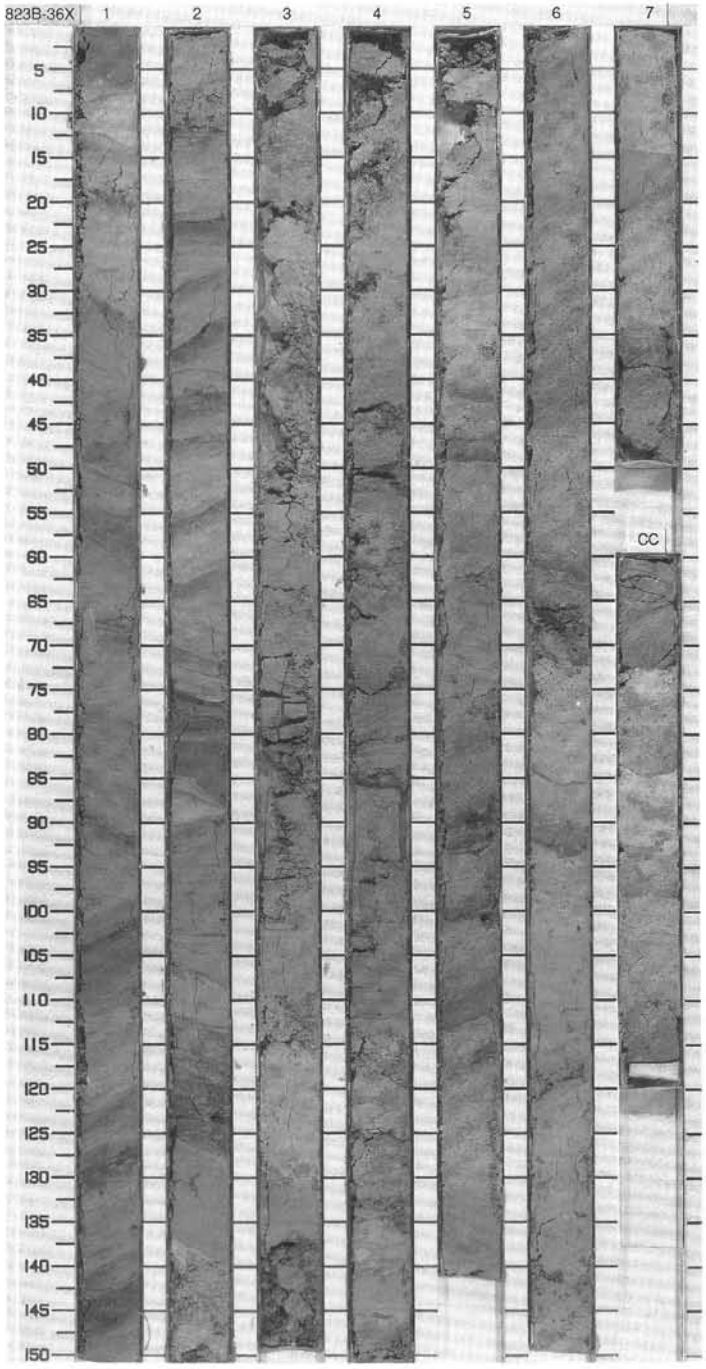
NANNOFOSSIL CHALK with FORAMINIFER and BIOCLASTS

Major lithology: Light gray (5GY 7/1) to dark greenish gray (5GY 5/1), finely laminated and moderately burrowed NANNOFOSSIL CHALK with FORAMINIFERS and BIOCLASTS. Laminations are due to subtle color variations.

Minor lithology: A few thin (up to several cm thick), dark gray (5GY 5/1), partially lithified SKELETAL PACKSTONE beds occur in Section 1, between 30 and 33 cm and 145-149, Section 2, between 24 and 25 and 79-83 and Section 5, at 40, 50 and 90 cm.

SMEAR SLIDE SUMMARY (%):

	1, 74 D
COMPOSITION:	
Bioclast	10
Foraminiters	10
Nannofossils	73
Quartz	5
Spicules	2



SITE 823 HOLE B CORE 37X CORED INTERVAL 343.9-353.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER PLIOCENE	A/G	N18 - N19	CN12a		N?	• 57.9% 1.87 • 55.3% 1.83 • 54.2% 1.91 • 55.1% 1.85 • 57.1% 1.86 • 57.1% 1.86	• 55.5% • 70.3% • 77.5%	1 2 3 4 5 6 7 CC	0.5 1.0				PAL

LITHOLOGIC DESCRIPTION

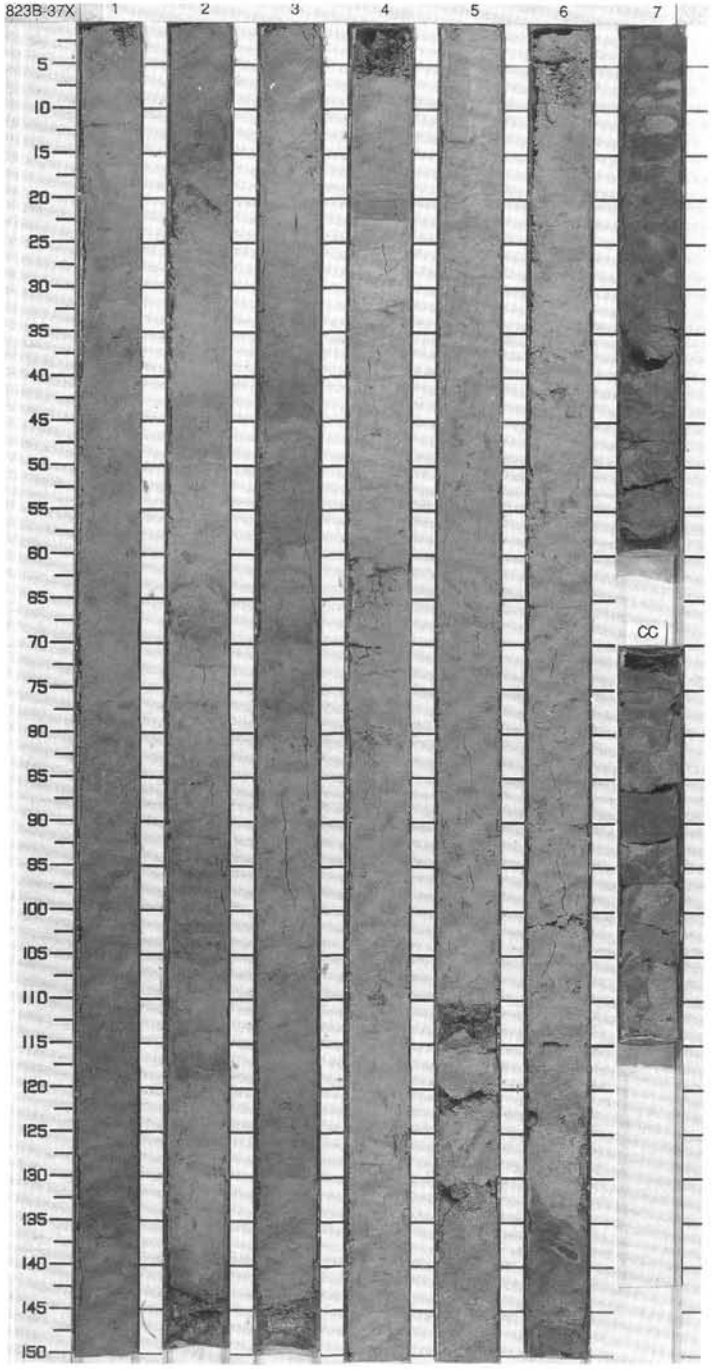
NANNOFOSSIL CHALK with BIOCLASTS and FORAMINIFERS

Major lithology: Light gray (5GY 7/1) to dark gray (5GY 4/1), heavily bioturbated NANNOFOSSIL CHALK with BIOCLASTS and FORAMINIFERS.

Minor lithology: From the bottom of Section 6 onwards the dominant lithology is a gray (5GY 5/1) LITHOCLASTIC RUDSTONE with clasts of laminated NANNOFOSSIL CHALK and pieces of slump folds.

SMEAR SLIDE SUMMARY (%):

	2, 70 D	2, 96 D	4, 35 D
COMPOSITION:			
Aragonite	---	---	15
Bioclast	20	8	---
Carbonate particles	10	15	15
Clay	5	---	---
Foraminifers	5	10	10
Glauconite	Tr	1	---
Micrite	1	---	---
Nannofossils	50	50	55
Pyrite	Tr	1	---
Quartz	5	10	5
Spicules	4	5	---



SITE 823 HOLE B CORE 38X CORED INTERVAL 353.4-363.0 mbsf

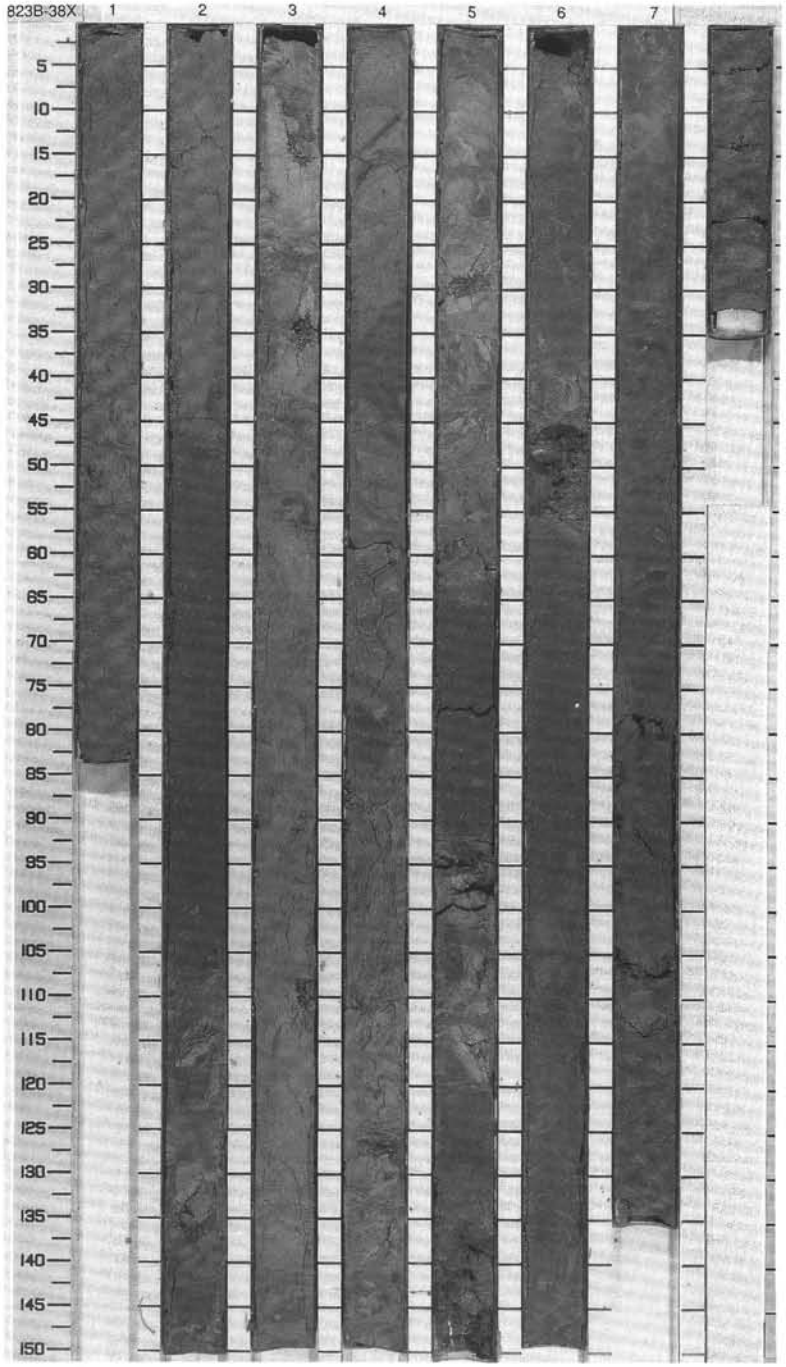
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	?	CN11b			N?			1	0.5				
C/M									1.0	VOID			
A/M								2					
						● 49.5% 1.95	● 40.99%						
						● 51.3% 2.09		3					
						● 57.3% 1.87	● 58.3%	4					
					● 51.8% 1.94			5					
					● 52.4% 2.00		● 53.9%	6					
					● 50.5% 1.94			7					
								CC					

LITHOLOGIC DESCRIPTION

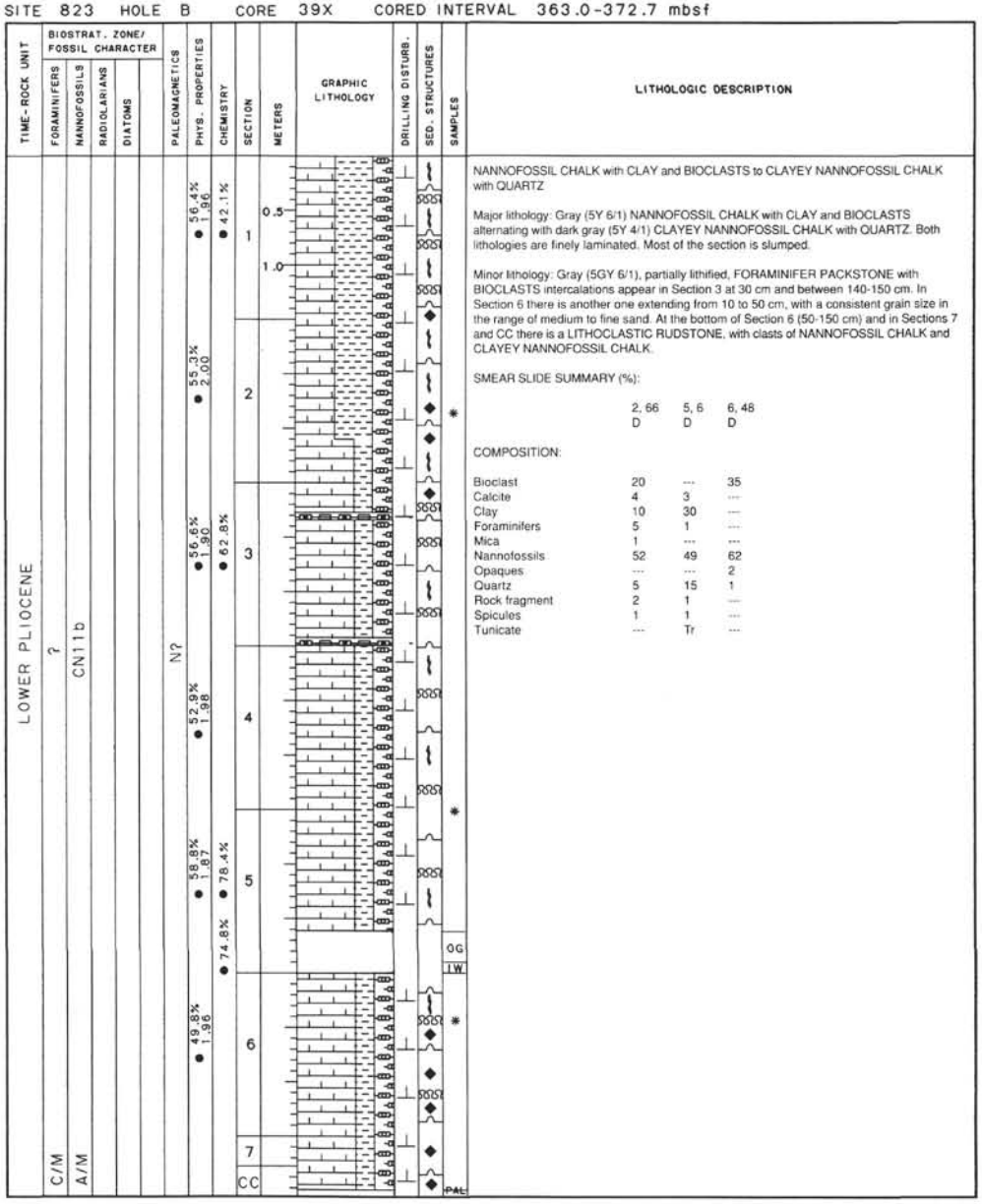
NANNOFOSSIL CHALK with FORAMINIFERS and CLASTS

Major lithology: Dark gray (5GY 4/1) to gray (5GY 6/1), bioturbated to laminated NANNOFOSSIL CHALK with FORAMINIFERS and BIOCLASTS. The entire core is within a slump and locally contains a LITHOCLASTIC RUDSTONE.

Minor lithology: Dark gray (5GY 4/1), variably laminated CLAYEY NANNOFOSSIL CHALK is the only lithology represented in Section 6, Section 7 and CC.



SITE 823 HOLE B CORE 39X CORED INTERVAL 363.0-372.7 mbsf



LITHOLOGIC DESCRIPTION

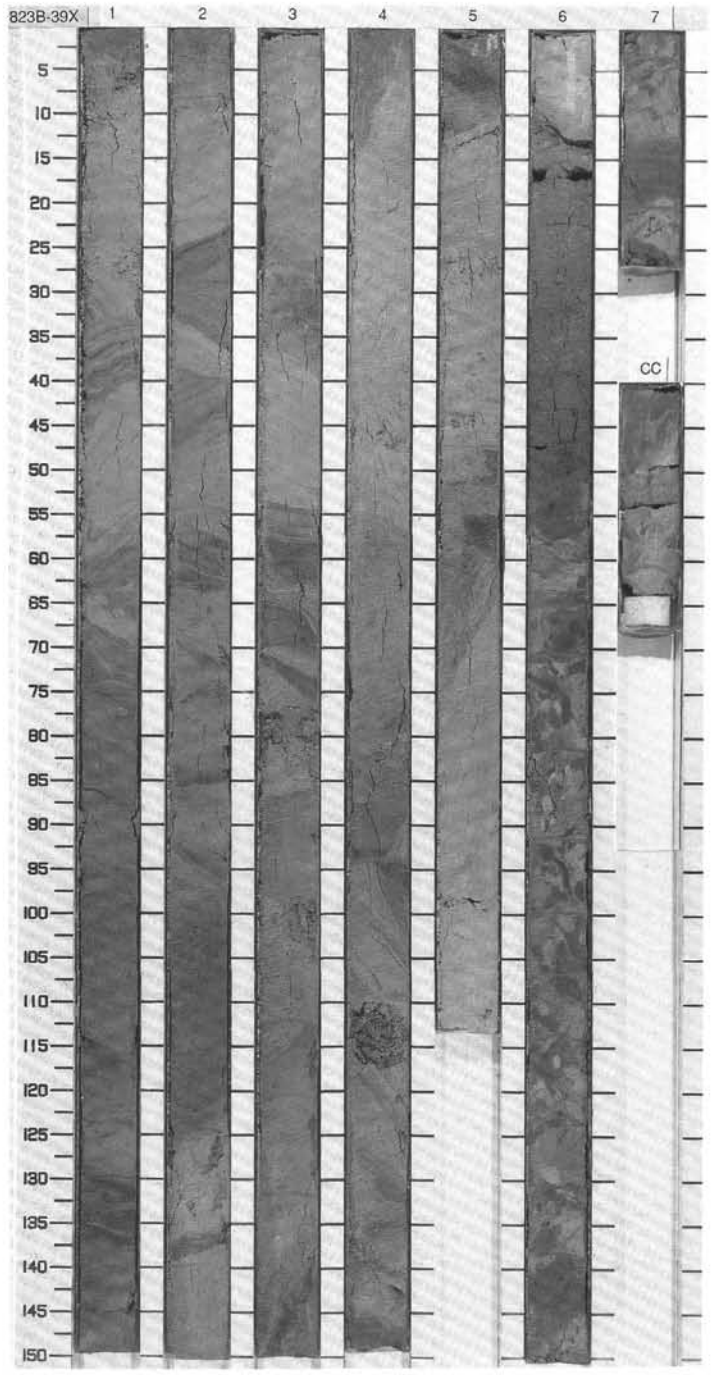
NANNOFOSSIL CHALK with CLAY and BIOCLASTS to CLAYEY NANNOFOSSIL CHALK with QUARTZ

Major lithology: Gray (5Y 6/1) NANNOFOSSIL CHALK with CLAY and BIOCLASTS alternating with dark gray (5Y 4/1) CLAYEY NANNOFOSSIL CHALK with QUARTZ. Both lithologies are finely laminated. Most of the section is slumped.

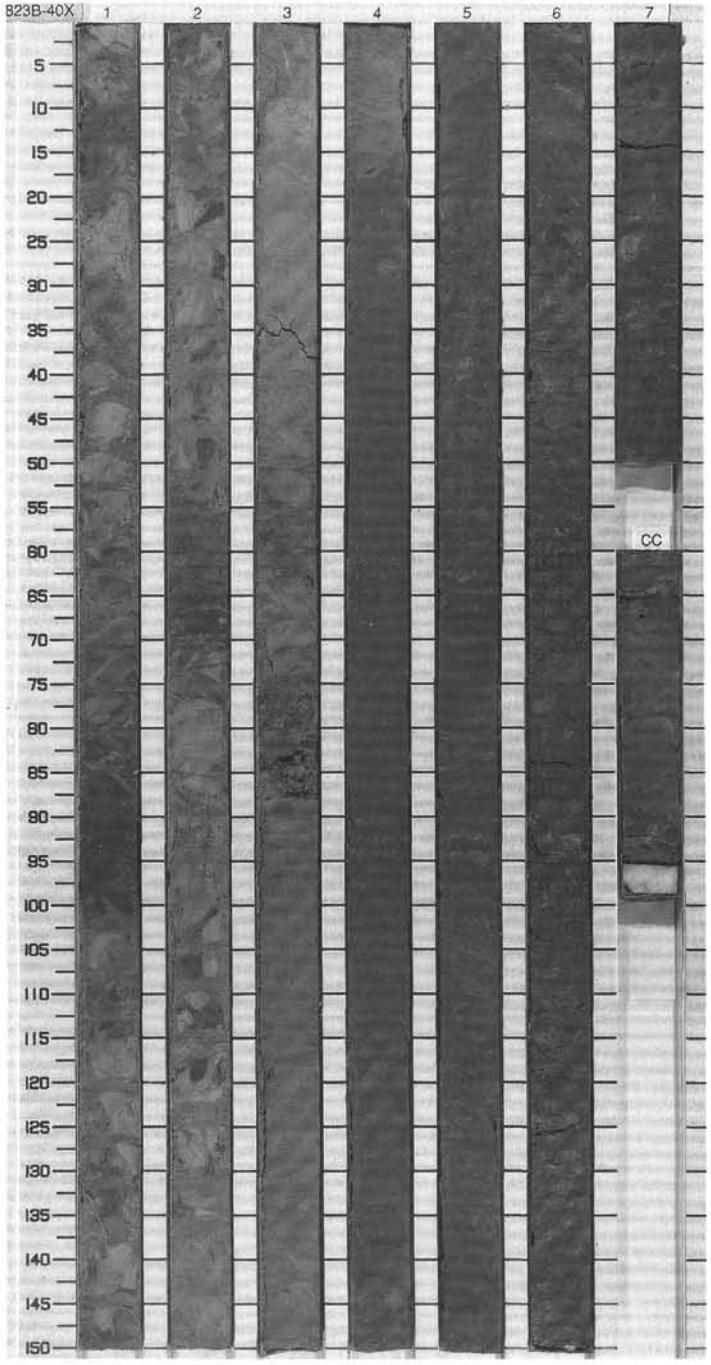
Minor lithology: Gray (5GY 6/1), partially lithified, FORAMINIFER PACKSTONE with BIOCLASTS intercalations appear in Section 3 at 30 cm and between 140-150 cm. In Section 6 there is another one extending from 10 to 50 cm, with a consistent grain size in the range of medium to fine sand. At the bottom of Section 6 (50-150 cm) and in Sections 7 and CC there is a LITHOCLASTIC RUDSTONE, with clasts of NANNOFOSSIL CHALK and CLAYEY NANNOFOSSIL CHALK.

SMEAR SLIDE SUMMARY (%):

	2, 66 D	5, 6 D	6, 48 D
COMPOSITION:			
Bioclast	20	---	35
Calcite	4	3	---
Clay	10	30	---
Foraminifers	5	1	---
Mica	1	---	---
Nannofossils	52	49	62
Opaques	---	---	2
Quartz	5	15	1
Rock fragment	2	1	---
Spicules	1	1	---
Tunicate	---	Tr	---



TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER PLIOCENE	?	CN11b			N?	• 47.1% 2.02 • 47.7% 2.02 • 48.2% 2.03 • 51.8% 2.00 • 52.2% 1.95 • 51.4% 1.93	• 44.5% • 48.8% • 52.2%	1 2 3 4 5 6 7 CC	0.5 1.0				6	NANNOFOSSIL MIXED SEDIMENT to COARSE LITHOCLASTIC MIXED SEDIMENT Major lithology: Light gray (5GY 7/1) to dark gray (5GY 4/1), finely laminated and slumped NANNOFOSSIL MIXED SEDIMENT mixed with coarse grained (conglomerate-sized) LITHOCLASTIC MIXED SEDIMENT with clasts and matrix with the same composition as the finer grained mixed sediment.



SITE 823 HOLE B CORE 41X CORED INTERVAL 382.4-392.0 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N18 - N19; NANNOFOSSILS A/G CN11b; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: N?

PHYS. PROPERTIES: ● 52.7% 1.92; ● 54.1% 1.93; ● 57.8% 1.89; ● 53.7% 1.91; ● 56.9% 1.91; ● 61.4% 1.88

CHEMISTRY: ● 66.0%; ● 51.5%; ● 62.1%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: F

SAMPLES: *, □

LITHOLOGIC DESCRIPTION

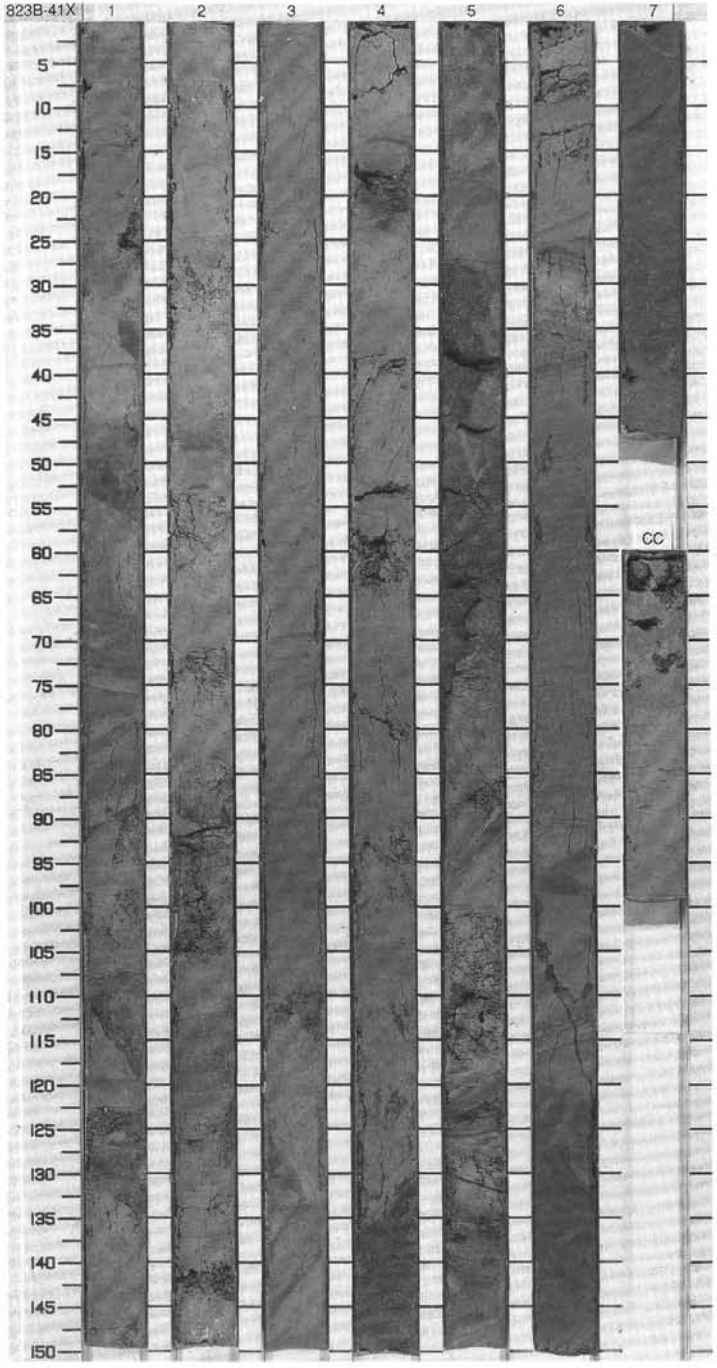
NANNOFOSSIL CHALK to CLAYEY NANNOFOSSIL MIXED SEDIMENT

Major lithology: Light gray (5GY 7/1) to dark gray (5GY 4/1), bioturbated to laminated NANNOFOSSIL CHALK is the prevailing lithology in Sections 1, 2, 4, 5, 6, 7 and CC. In Section 3 it is a gray (5GY 6/1), bioturbated CLAYEY NANNOFOSSIL MIXED SEDIMENT.

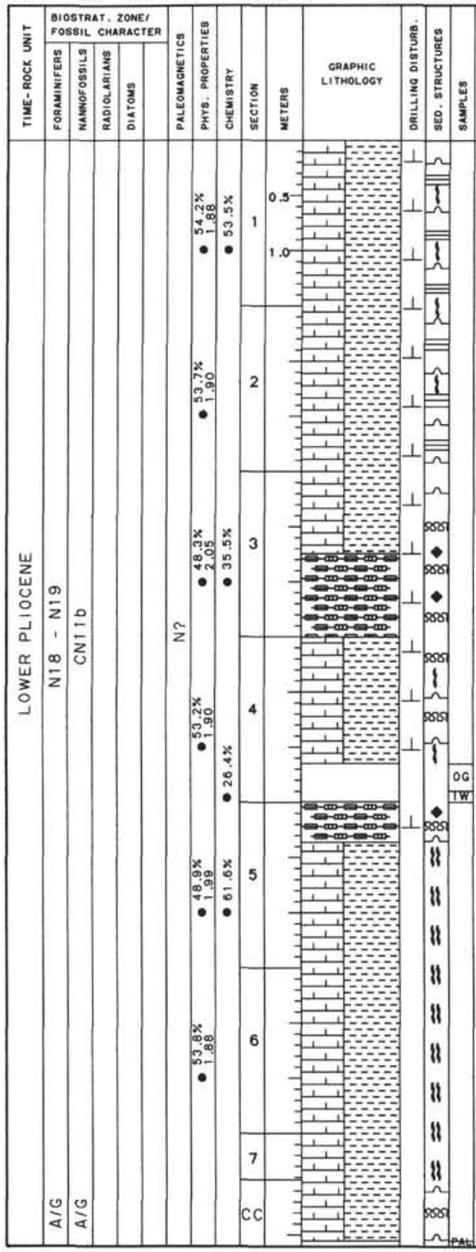
Minor lithology: Dark gray (5GY 4/1), partially lithified BIOCLASTIC FORAMINIFER PACKSTONE occurs in Section 4 (from 130 to 146 cm) and Section 5 (around 40 to 70 cm), in this last case within a slump fold. Dark gray (5GY 4/1) LITHOCLASTIC RUDSTONES occur at the bottom of Section 6.

SMEAR SLIDE SUMMARY (%):

	3, 59 D	CF 4, 139 D
COMPOSITION:		
Bioclast	10	35
Calcite	---	5
Clay	35	---
Foraminifers	3	60
Nannofossils	50	---
Quartz	2	---



SITE 823 HOLE B CORE 42X CORED INTERVAL 392.0-401.6 mbsf

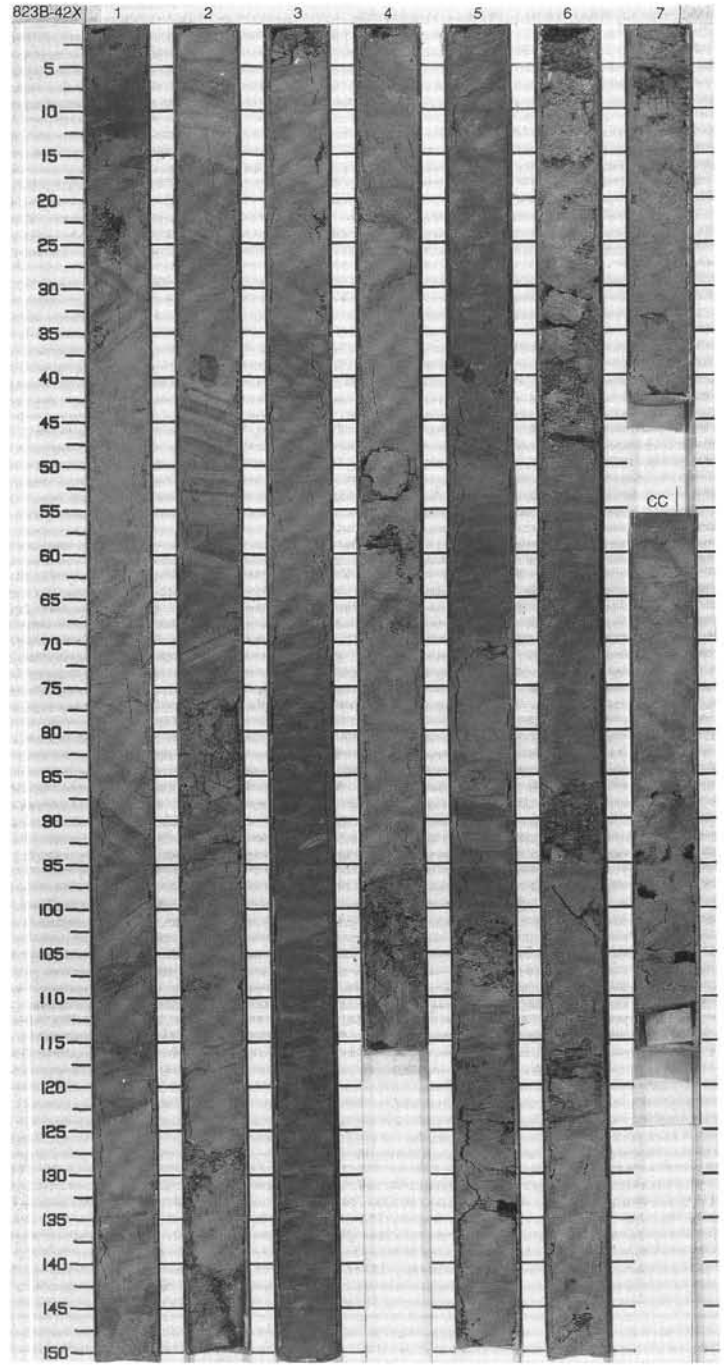


LITHOLOGIC DESCRIPTION

NANNOFOSSIL MIXED SEDIMENT with CLAY and BIOCLASTS to CLAYEY NANNOFOSSIL MIXED SEDIMENT

Major lithology: Gray (5Y 6/1) laminated NANNOFOSSIL MIXED SEDIMENT with CLAY and BIOCLASTS interbedded with dark gray (5Y 4/1) CLAYEY NANNOFOSSIL MIXED SEDIMENT.

Minor lithology: LITHOCLASTIC CONGLOMERATE, with clasts of NANNOFOSSIL MIXED SEDIMENT occur in Section 3 (75 to 150 cm), and 5 (20-38 cm). Dark gray (5Y 4/1), partially lithified, FORAMINIFER BIOCLASTIC PACKSTONE intercalations are located in Section 5 (38-50 cm) and CC, in this last case only 1 cm thick and intensively folded.



SITE 823 HOLE B CORE 43X CORED INTERVAL 401.6-411.3 mbsf

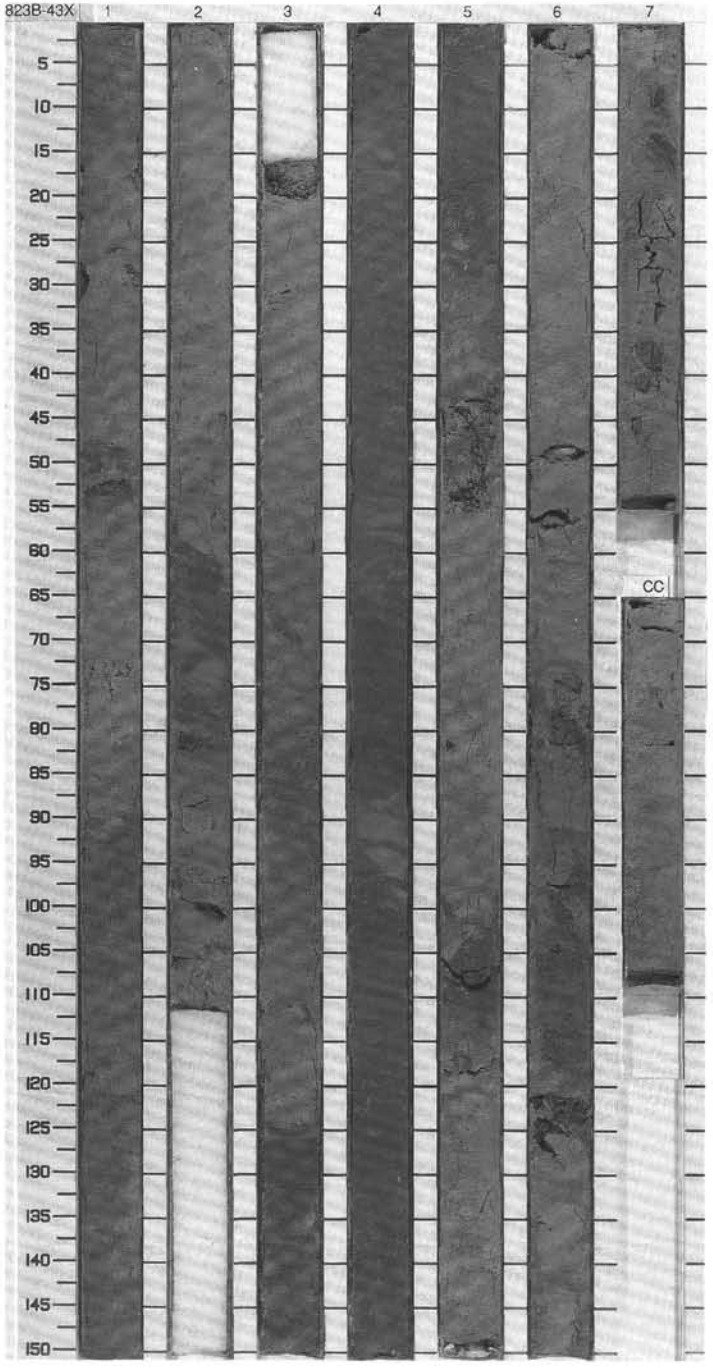
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/G	A/G			N?	● 54.0% 1.88	● 60.6%	5					
						● 52.4% 1.91		6				F	
						● 47.4% 2.01	● 47.0%	3		VOID			
						● 53.8% 1.92		4					
						● 55.4% 1.95	● 44.4%	2				SS SS	
						● 50.4% 1.97		1	0.5 1.0				PAL

LITHOLOGIC DESCRIPTION

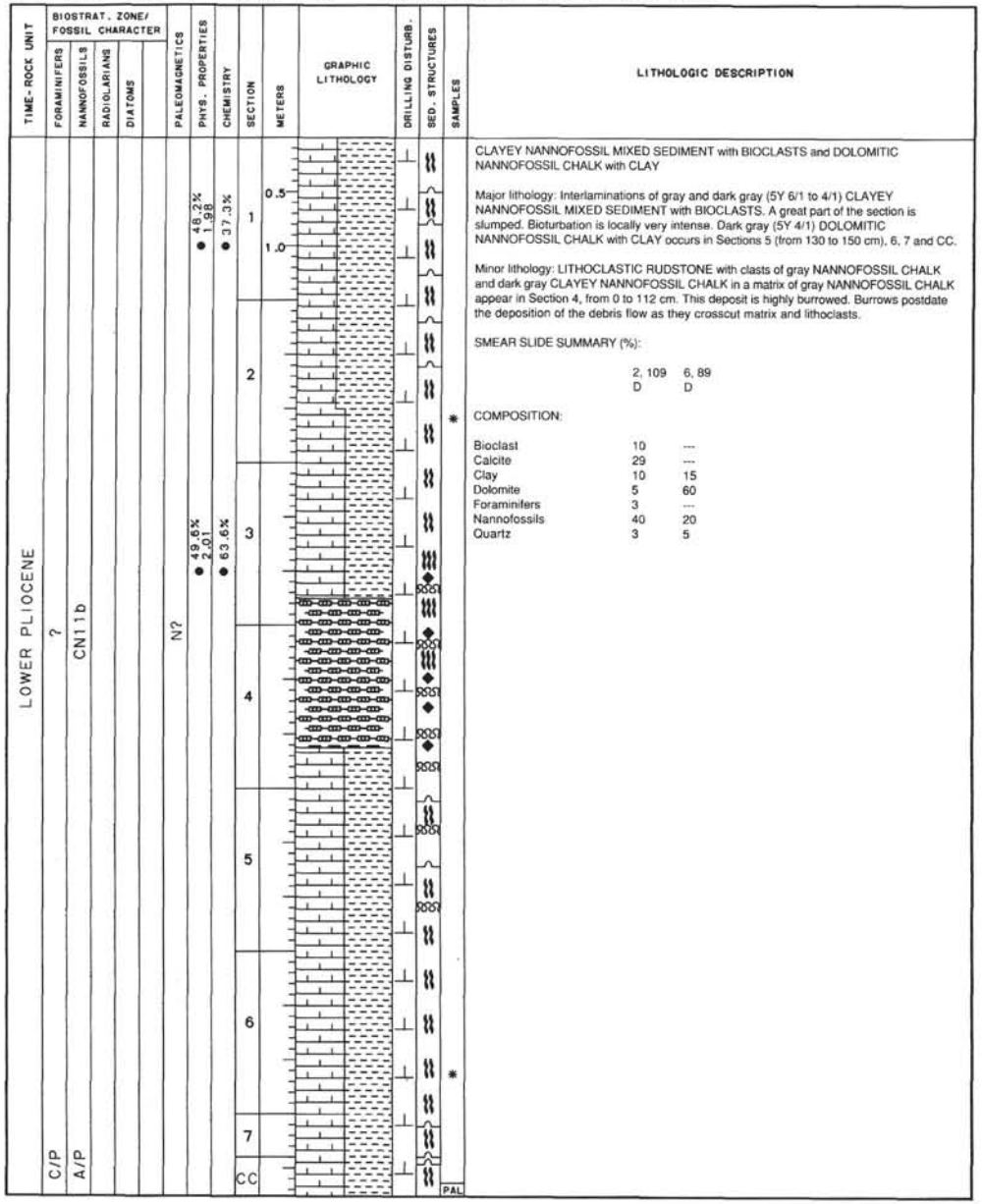
NANNOFOSSIL MIXED SEDIMENT

Major lithology: Gray (5Y 5/1) to dark gray (5Y 4/1), finely laminated and burrowed. NANNOFOSSIL MIXED SEDIMENT.

Minor lithology: Some very minor, centimeter thick, dark gray (5Y 4/1) partially lithified BIOCLASTIC FORAMINIFER PACKSTONE intercalations are located in Sections 5 and 6.



SITE 823 HOLE B CORE 44X CORED INTERVAL 411.3-420.9 mbsf



LITHOLOGIC DESCRIPTION

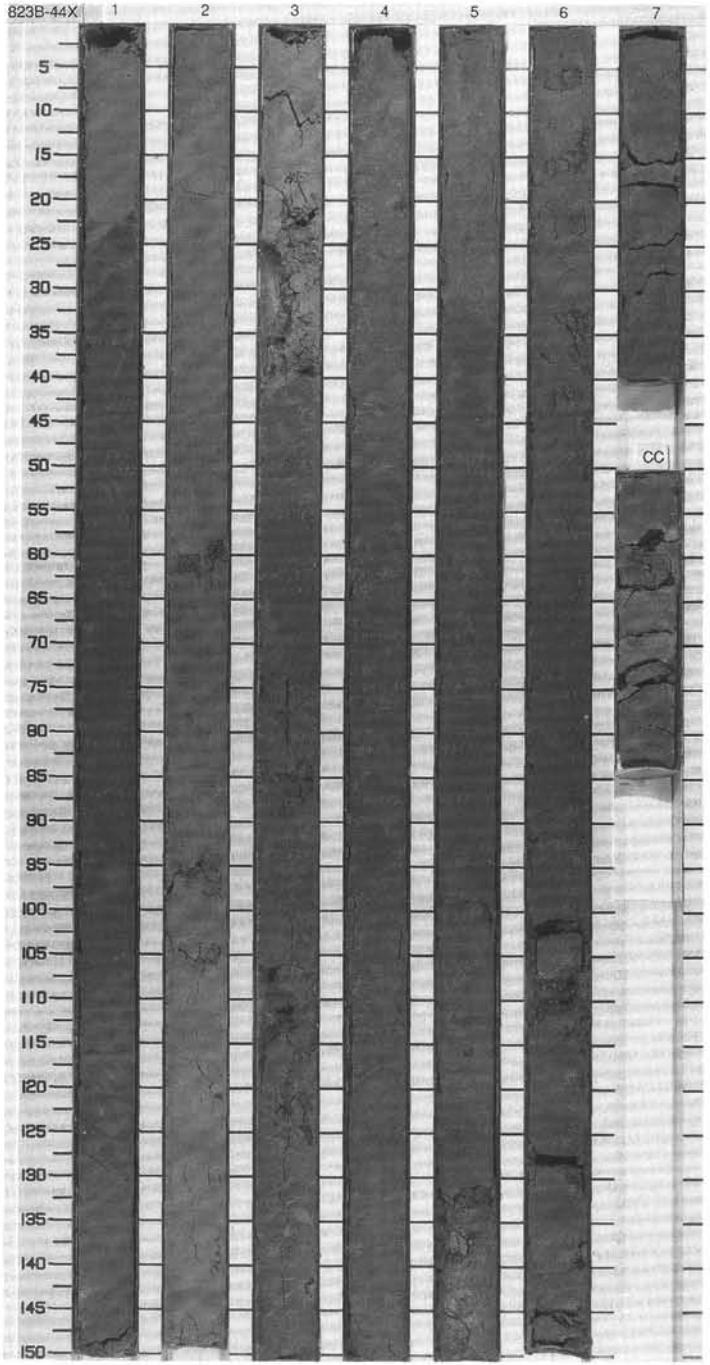
CLAYEY NANNOFOSSIL MIXED SEDIMENT with BIOCLASTS and DOLOMITIC NANNOFOSSIL CHALK with CLAY

Major lithology: Interlaminations of gray and dark gray (5Y 6/1 to 4/1) CLAYEY NANNOFOSSIL MIXED SEDIMENT with BIOCLASTS. A great part of the section is slumped. Bioturbation is locally very intense. Dark gray (5Y 4/1) DOLOMITIC NANNOFOSSIL CHALK with CLAY occurs in Sections 5 (from 130 to 150 cm), 6, 7 and CC.

Minor lithology: LITHOCLASTIC RUDSTONE with clasts of gray NANNOFOSSIL CHALK and dark gray CLAYEY NANNOFOSSIL CHALK in a matrix of gray NANNOFOSSIL CHALK appear in Section 4, from 0 to 112 cm. This deposit is highly burrowed. Burrows postdate the deposition of the debris flow as they crosscut matrix and lithoclasts.

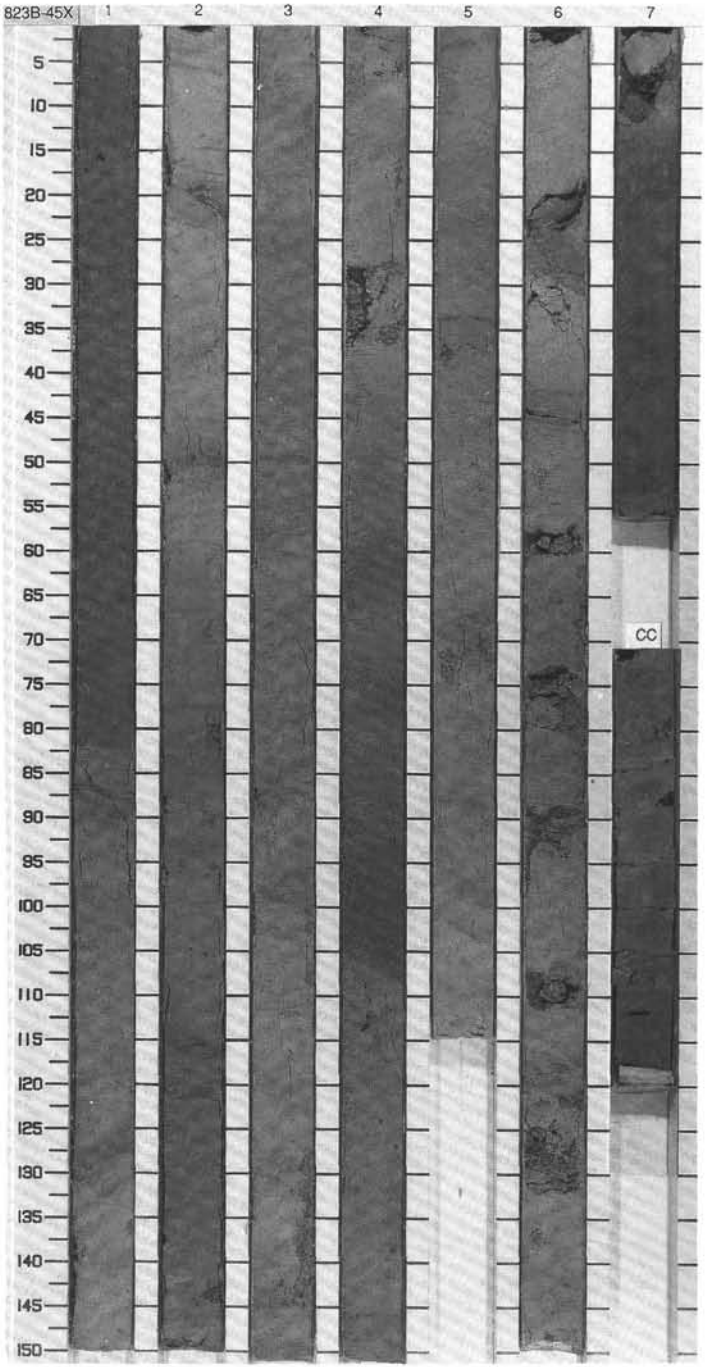
SMEAR SLIDE SUMMARY (%):

	2, 109 D	6, 89 D
COMPOSITION:		
Bioclast	10	---
Calcite	29	---
Clay	10	15
Dolomite	5	60
Foraminifers	3	---
Nannofossils	40	20
Quartz	3	5

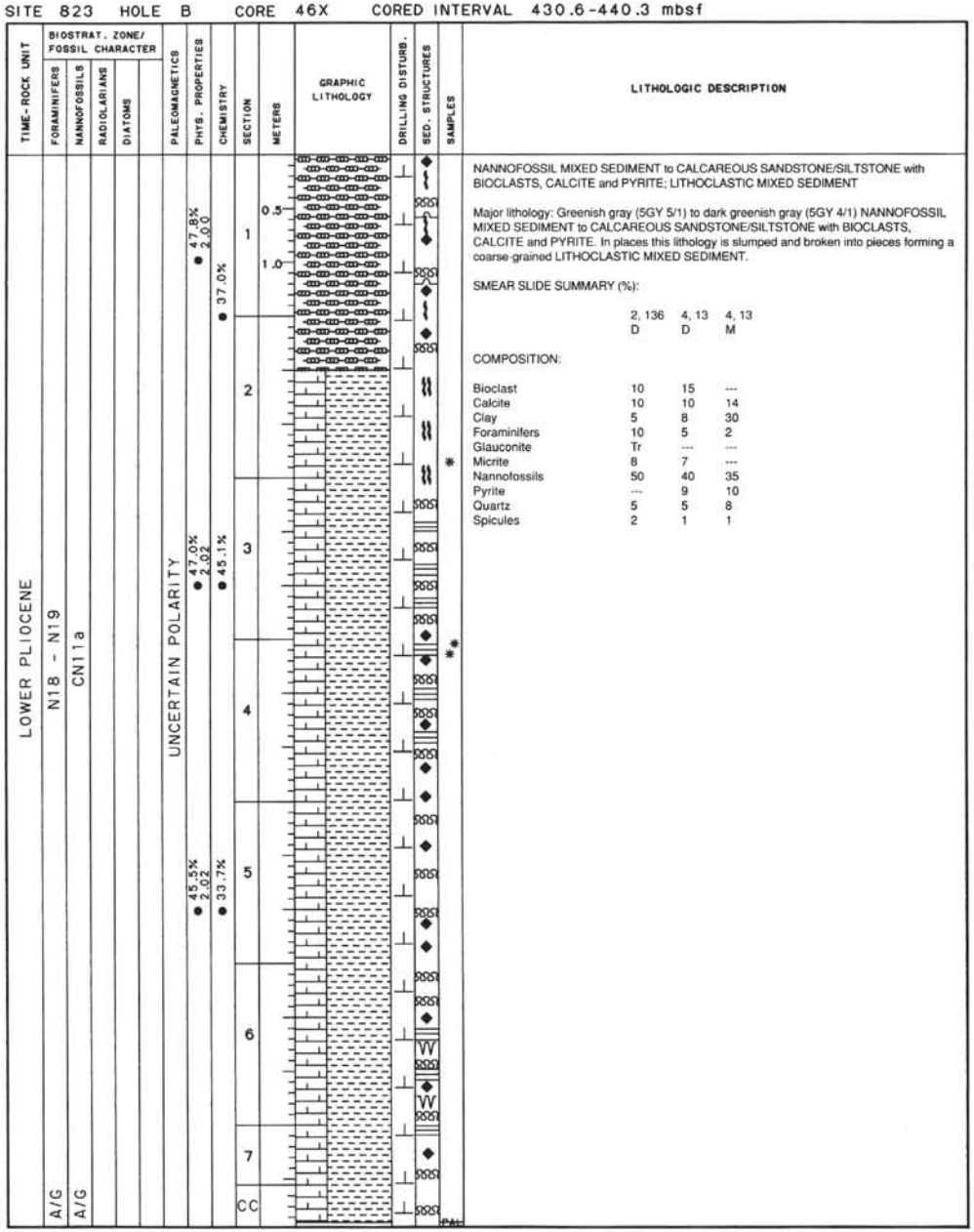


SITE 823 HOLE B CORE 45X CORED INTERVAL 420.9-430.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER PLIOCENE	N18 - N19	CN11b			UNCERTAIN POLARITY	54.3% 1.84	69.4%	1	0.5 1.0					NANNOFOSSIL CHALK Major lithology: Gray (5Y 5/1) to dark gray (5Y 4/1), weakly laminated and burrowed NANNOFOSSIL CHALK. Minor lithology: In Sections 7 and CC, dark gray (5Y 4/1) coarse grained LITHOCLASTIC MIXED SEDIMENTS occur. Clasts of NANNOFOSSIL CHALK within the mixed sediment are sometimes burrowed. SMEAR SLIDE SUMMARY (%): 2, 130 D COMPOSITION: Bioclast 10 Clay 35 Foraminifers 5 Nannofossils 45 Quartz 5 Spicules Tr
	A/M	A/G				52.0% 1.85		2						
								3						
						57.0% 1.90	64.3% 51.9%	4						
								5					OG 1W	
							67.6%	6						
								7						
								CC					PAL	



SITE 823 HOLE B CORE 46X CORED INTERVAL 430.6-440.3 mbsf

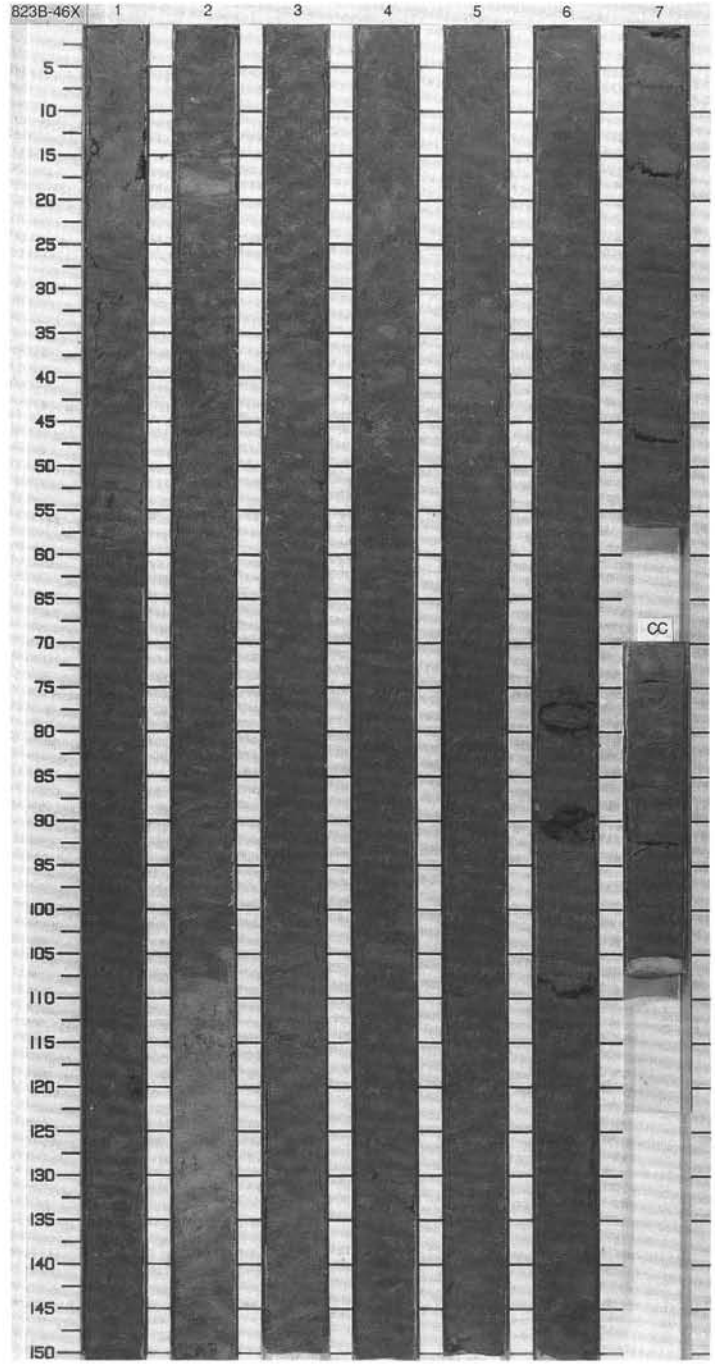


NANNOFOSSIL MIXED SEDIMENT to CALCAREOUS SANDSTONE/SILTSTONE with BIOCLASTS, CALCITE and PYRITE; LITHOCLASTIC MIXED SEDIMENT

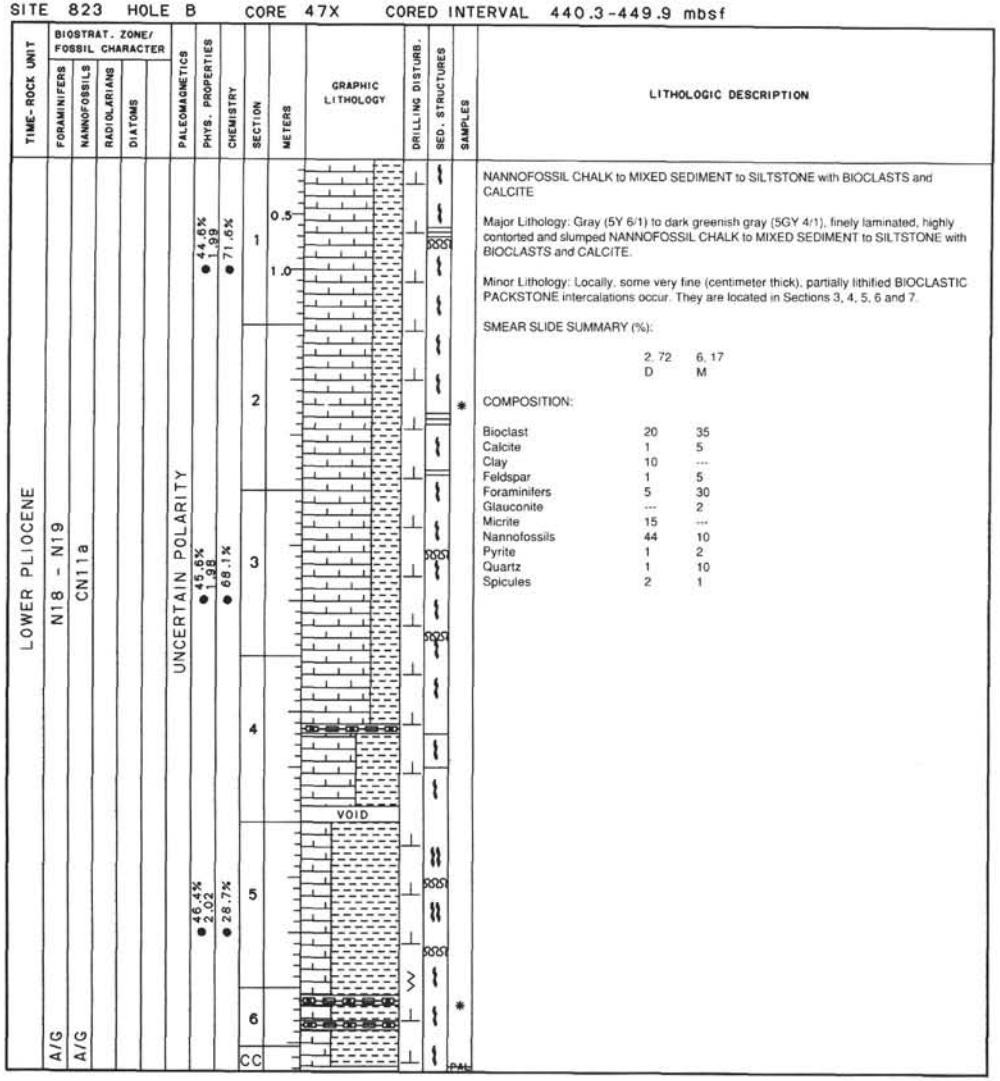
Major lithology: Greenish gray (5GY 5/1) to dark greenish gray (5GY 4/1) NANNOFOSSIL MIXED SEDIMENT to CALCAREOUS SANDSTONE/SILTSTONE with BIOCLASTS, CALCITE and PYRITE. In places this lithology is slumped and broken into pieces forming a coarse-grained LITHOCLASTIC MIXED SEDIMENT.

SMEAR SLIDE SUMMARY (%):

	2, 136 D	4, 13 D	4, 13 M
COMPOSITION:			
Bioclast	10	15	---
Calcite	10	10	14
Clay	5	8	30
Foraminifers	10	5	2
Glauconite	Tr	---	---
Micrite	8	7	---
Nannofossils	50	40	35
Pyrite	---	9	10
Quartz	5	5	8
Spicules	2	1	1



SITE 823 HOLE B CORE 47X CORED INTERVAL 440.3-449.9 mbsf



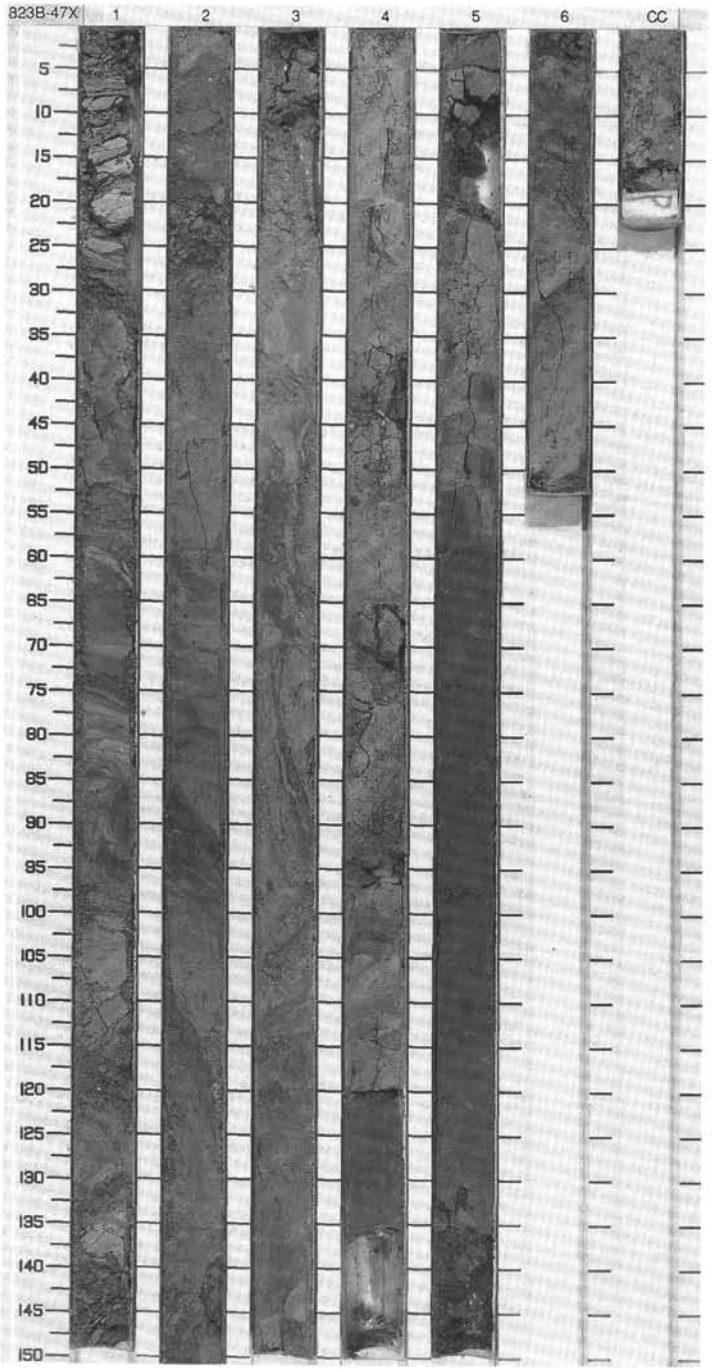
NANNOFOSSIL CHALK to MIXED SEDIMENT to SILTSTONE with BIOCLASTS and CALCITE

Major Lithology: Gray (5Y 6/1) to dark greenish gray (5GY 4/1), finely laminated, highly contorted and slumped NANNOFOSSIL CHALK to MIXED SEDIMENT to SILTSTONE with BIOCLASTS and CALCITE.

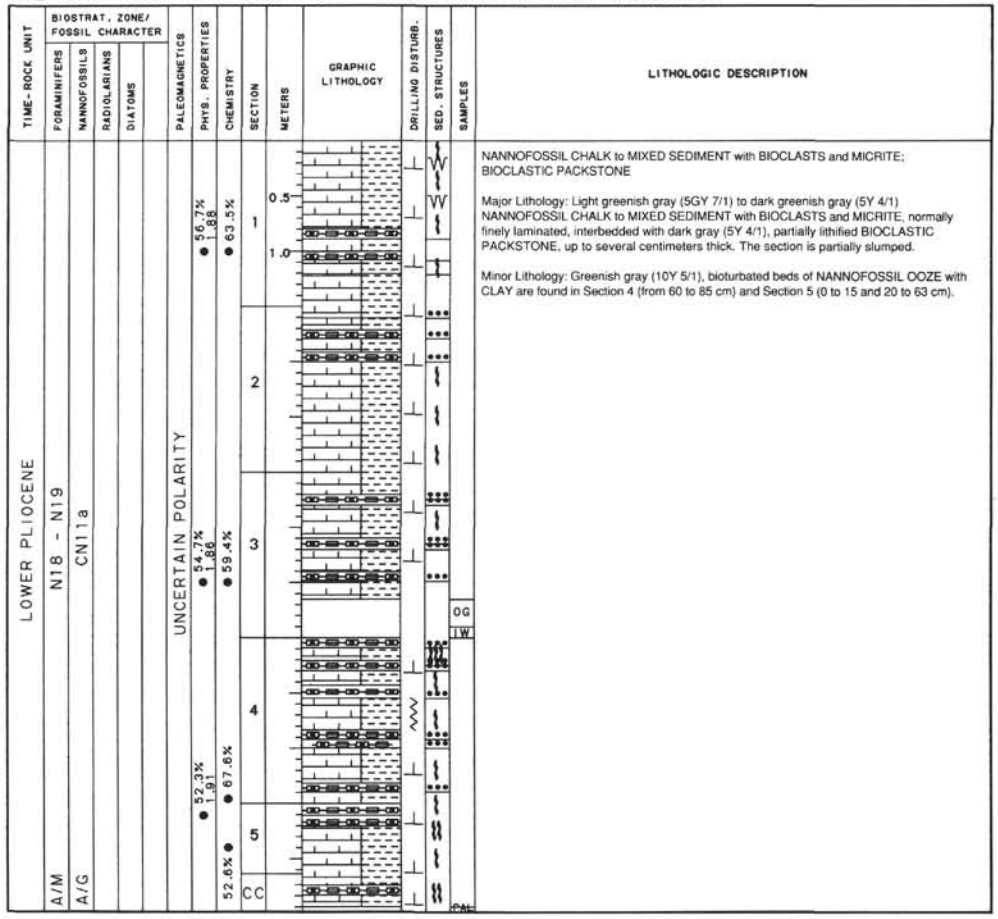
Minor Lithology: Locally, some very fine (centimeter thick), partially lithified BIOCLASTIC PACKSTONE intercalations occur. They are located in Sections 3, 4, 5, 6 and 7.

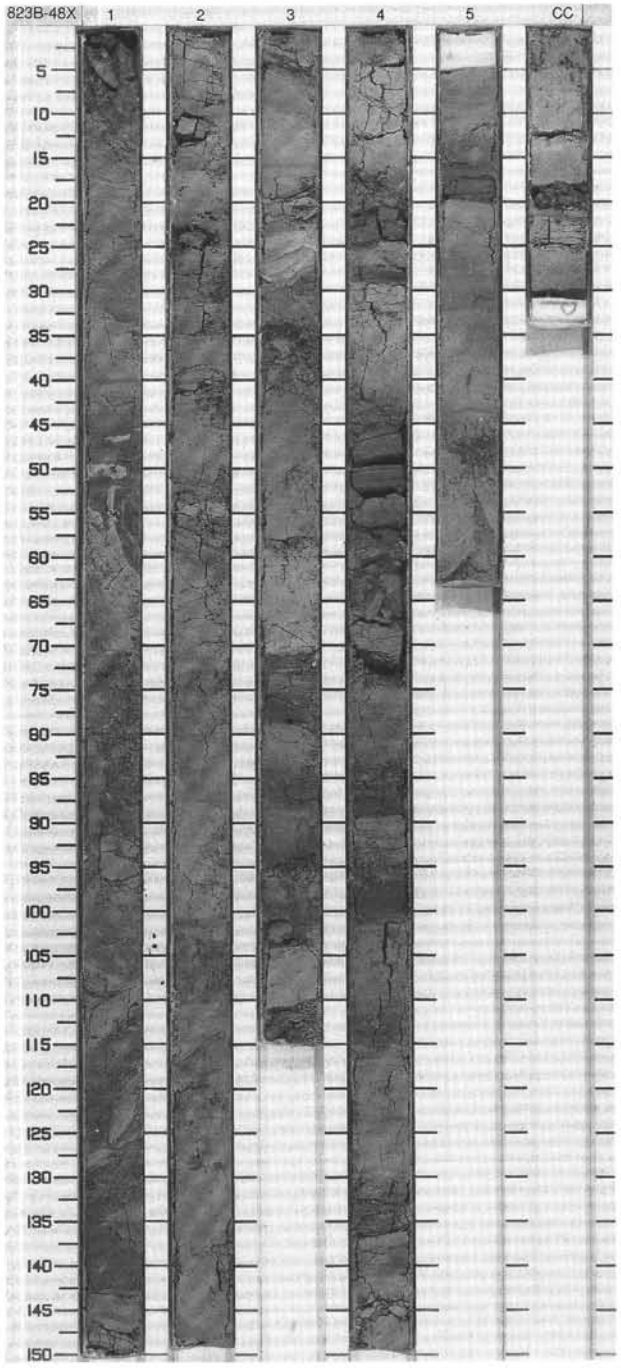
SMEAR SLIDE SUMMARY (%):

	2, 72 D	6, 17 M
COMPOSITION:		
Bioclast	20	35
Calcite	1	5
Clay	10	---
Feldspar	1	5
Foraminifers	5	30
Glauconite	---	2
Micrite	15	---
Nannofossils	44	10
Pyrite	1	2
Quartz	1	10
Spicules	2	1



SITE 823 HOLE B CORE 48X CORED INTERVAL 449.9-459.6 mbsf





SITE 823 HOLE B CORE 49X CORED INTERVAL 459.6-469.2 mbsf

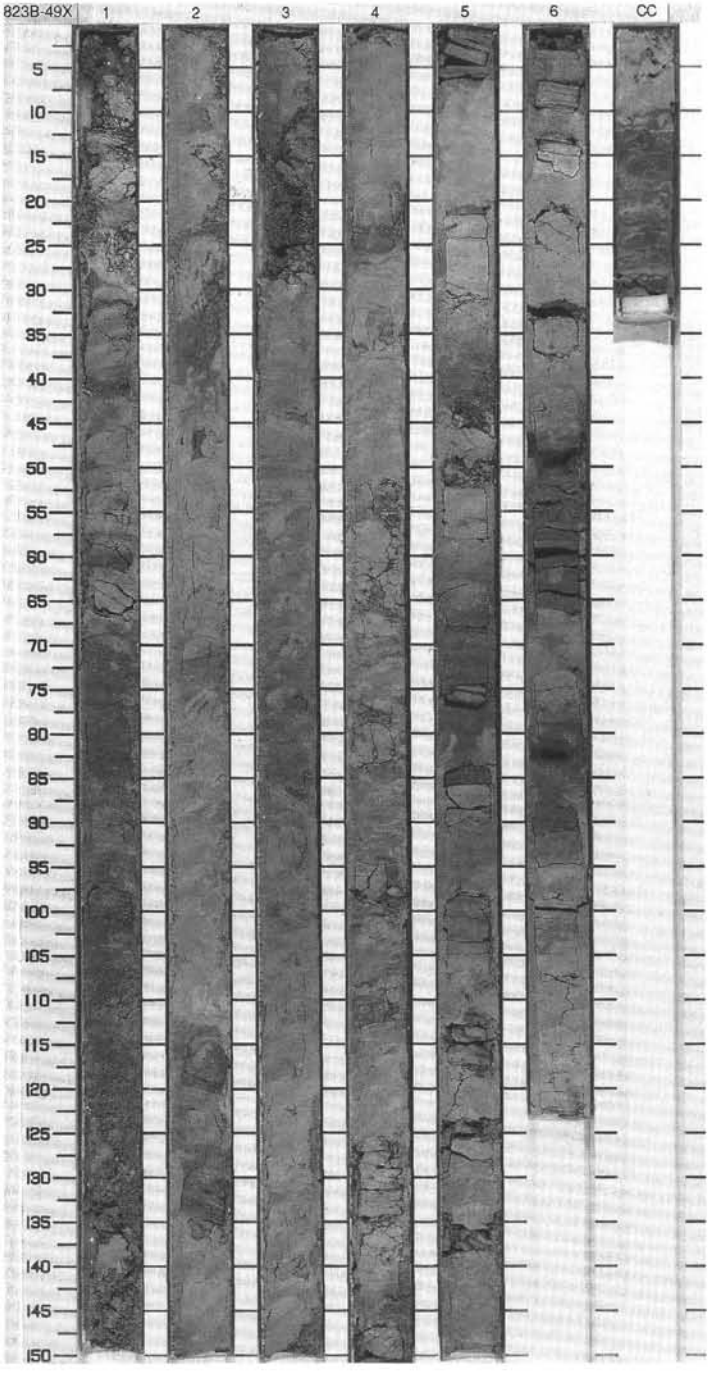
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/G	N18 - N19			UNCERTAIN POLARITY	● 57.4% 1.83	● 62.8%	1	0.5				
									1.0				
	A/G	CN11a				● 52.5% 1.87	● 62.8%	2					
								3					
						● 52.5% 1.90	● 54.0%	4					
								5				F	
					● 50.2% 1.94			6				F	
								CC					PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS

Major Lithology: Greenish gray (5GY 6/1), slightly bioturbated NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS.

Minor Lithology: Dark greenish gray (5GY 4/1), homogeneous, partially lithified FORAMINIFER BIOCLAST PACKSTONE or GRAINSTONE with QUARTZ, which commonly have sharp bases. Distinct tops are less common. In Section 5 normal, fining-upward grading of grain size occurs (0-8 cm, 79-64 cm).



SITE 823 HOLE B CORE 50X CORED INTERVAL 469.2-478.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	?	CN11a			UNCERTAIN POLARITY	● 53.6% 1.87 ● 49.1% 1.89 ● 58.8%	● 64.3%	1 2 3 CC	0.5 1.0				PAL

NANNOFOSSIL OOZE to MIXED SEDIMENT with BIOCLASTS

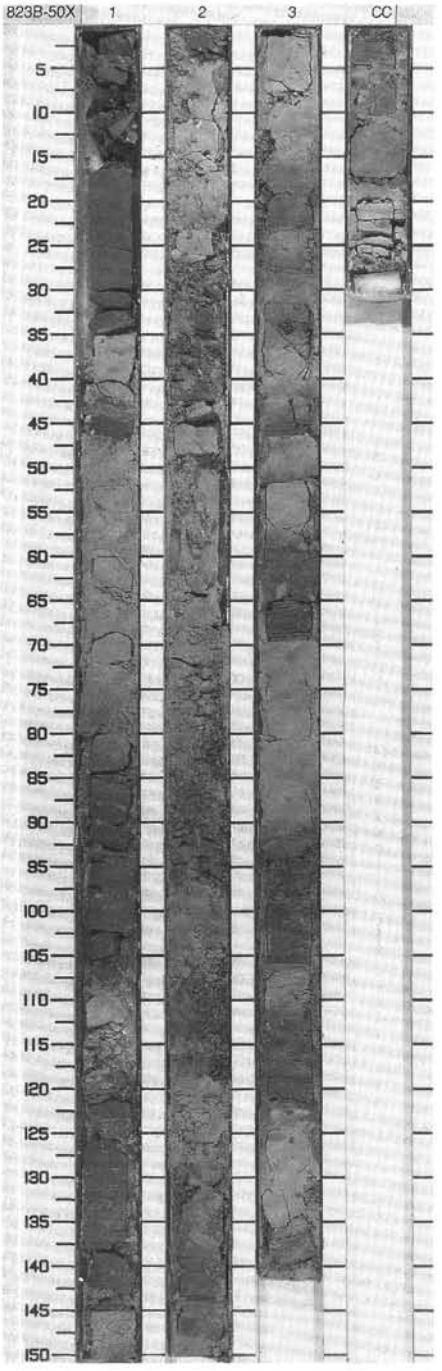
Major Lithology: Light greenish gray (10Y 7/1), bioturbated NANNOFOSSIL OOZE or CHALK to MIXED SEDIMENT with BIOCLASTS.

Minor Lithology: Dark greenish gray (10Y 4/1), partially lithified, FORAMINIFER BIOCLAST GRAINSTONE/PACKSTONE, showing normal graded bedding and sharp bases. Grains range from medium sand- at the base to silt-sized on top. At the base FORAMINIFERS dominate; BIOCLASTS increase upwards. In Section 1 (63-58 cm) one bed of light greenish gray (10Y 6/1), BIOCLASTIC PACKSTONE occurs.

SMEAR SLIDE SUMMARY (%):

	1, 119 M	1, 132 M	1, 144 M
COMPOSITION:			
Bioclast	12	44	45
Calcite	---	3	---
Clay	11	---	---
Dolomite	---	1	1
Foraminifers	12	5	35
Glauconite	---	1	2
Micrite	29	25	---
Nannofossils	35	8	5
Pyrite	1	2	Tr
Quartz	---	11	10
Spicules	Tr	---	2

823B 51X NO RECOVERY



SITE 823 HOLE B CORE 52X CORED INTERVAL 487.8-497.5 mbsf

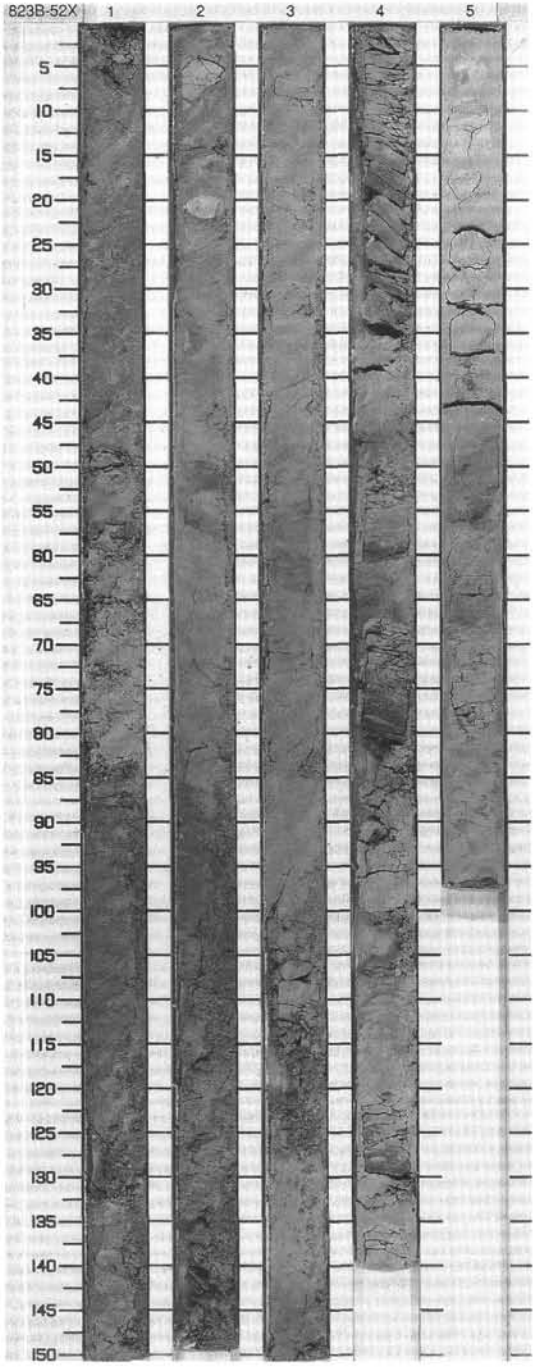
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/G	N18 - N19			UNCERTAIN POLARITY	● 50.1% 1.84	● 77.4%	5 CC					PAL
	A/G	CN11a					● 61.6%	4					TW
						● 46.7% 1.99	● 75.3%	3					
						● 49.4% 1.96	● 44.1%	2					
								1	0.5 1.0				

LITHOLOGIC DESCRIPTION

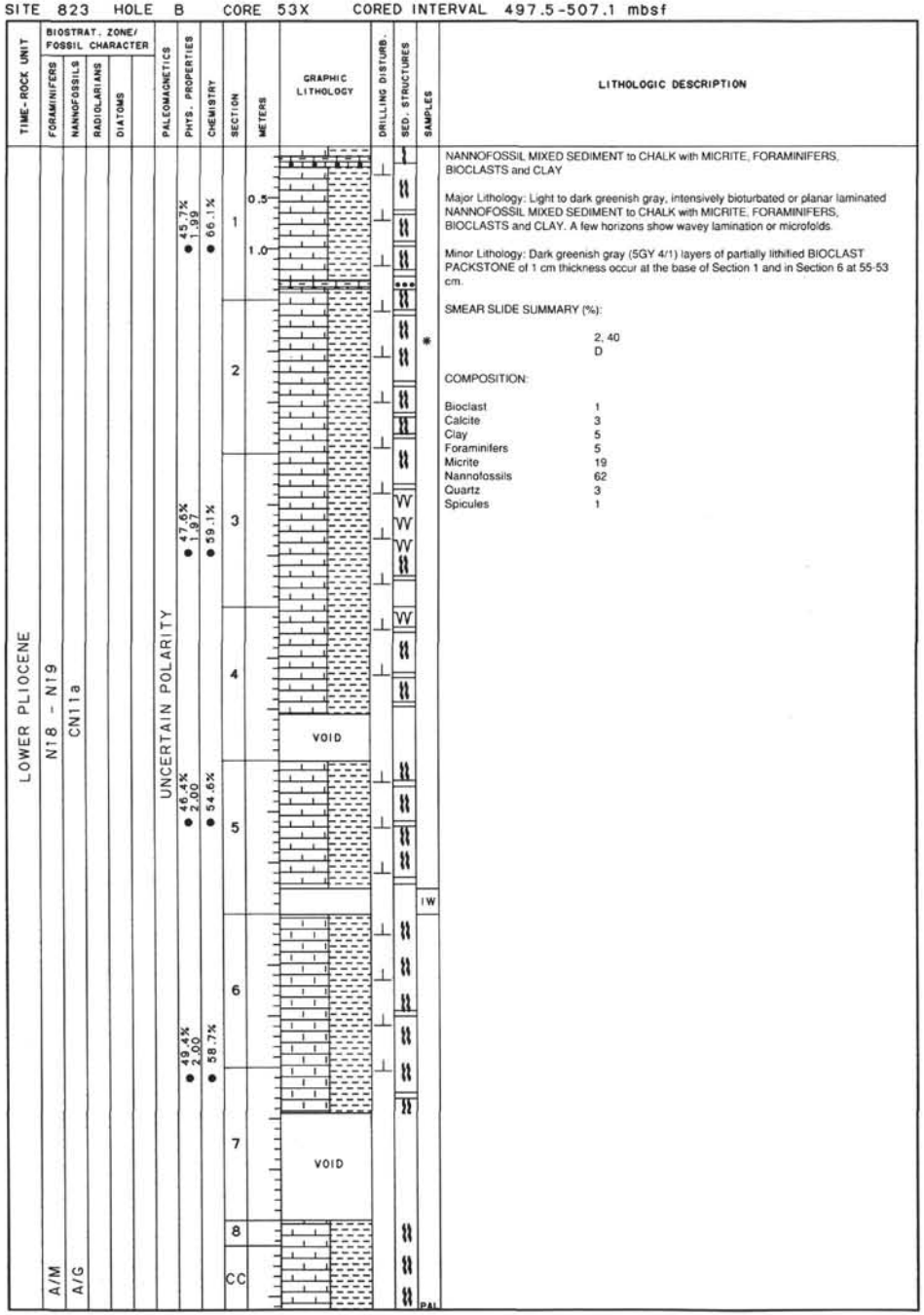
NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS and CALCITE

Major Lithology: Slightly bioturbated NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS and CALCITE ranging in color from light greenish gray (5GY 7/1) bands to dark greenish gray (5GY 4/1) layers.

Minor Lithology: Dark greenish gray (5GY 4/1), partially lithified, BIOCLAST PACKSTONE commonly showing sharp bases and gradual tops.



SITE 823 HOLE B CORE 53X CORED INTERVAL 497.5-507.1 mbsf



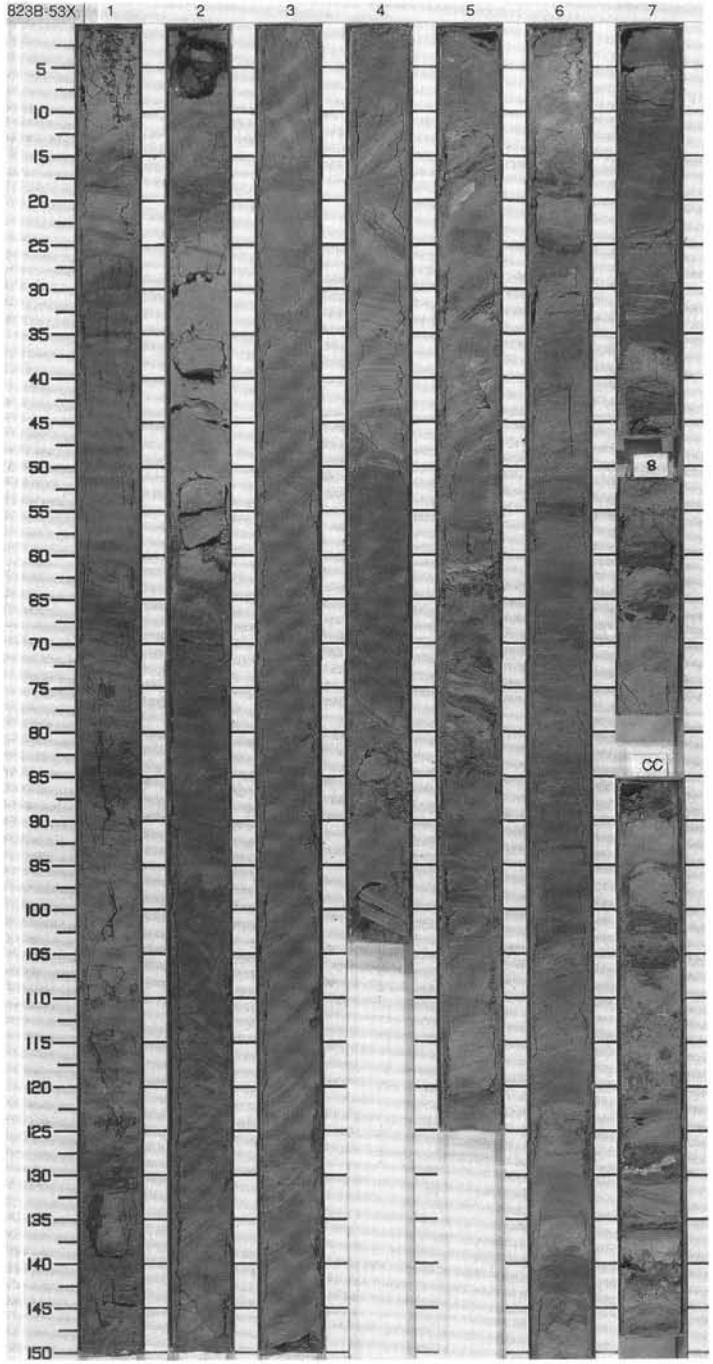
NANNOFOSSIL MIXED SEDIMENT to CHALK with MICRITE, FORAMINIFERS, BIOCLASTS and CLAY

Major Lithology: Light to dark greenish gray, intensively bioturbated or planar laminated NANNOFOSSIL MIXED SEDIMENT to CHALK with MICRITE, FORAMINIFERS, BIOCLASTS and CLAY. A few horizons show wavey lamination or microfolds.

Minor Lithology: Dark greenish gray (5GY 4/1) layers of partially lithified BIOCLAST PACKSTONE of 1 cm thickness occur at the base of Section 1 and in Section 6 at 55-53 cm.

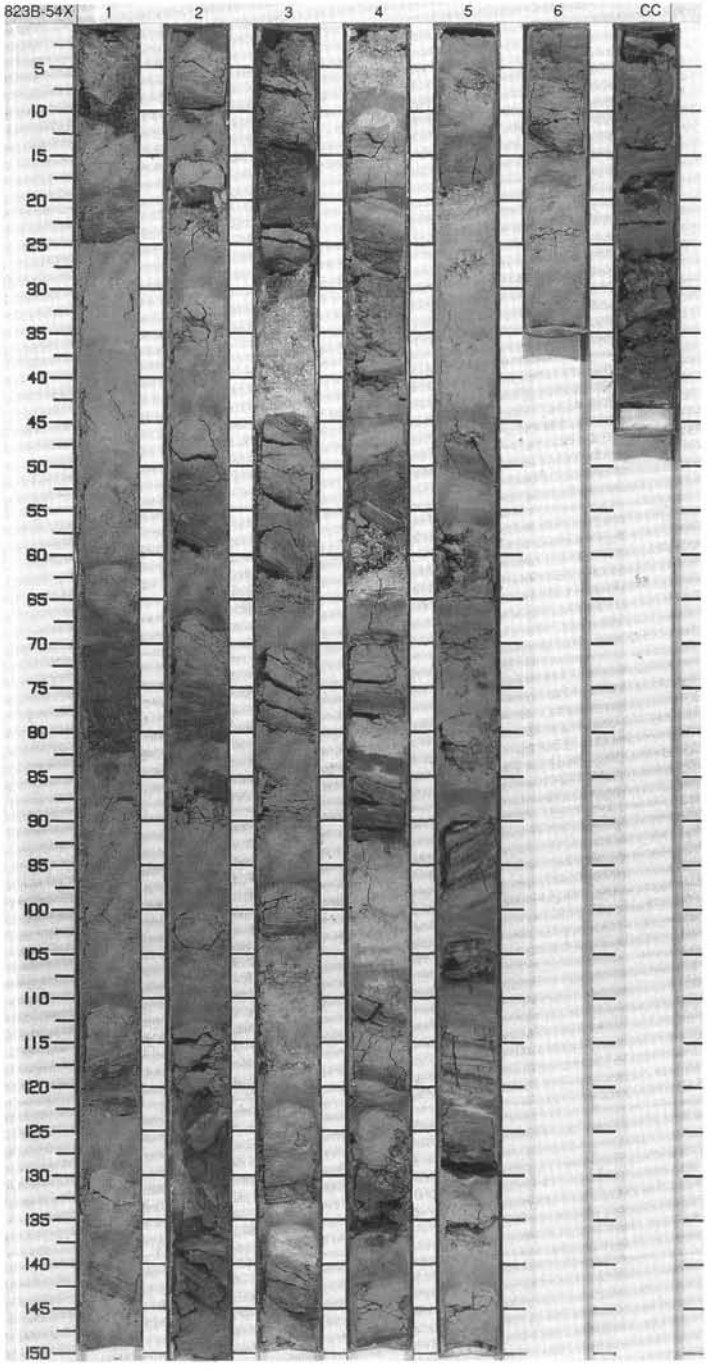
SMEAR SLIDE SUMMARY (%):

	2, 40 D
Bioclast	1
Calcite	3
Clay	5
Foraminifers	5
Micrite	19
Nannofossils	62
Quartz	3
Spicules	1



SITE 823 HOLE B CORE 54X CORED INTERVAL 507.1-516.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER PLIOCENE	N18 - N19	CN11a			UNCERTAIN POLARITY	● 47.8% 1.92 ● 46.2% 1.87	● 75.6% ● 63.6% ● 58.1%	1 2 3 4 5 6 CC	0.5 1.0				PAL	NANNOFOSSIL CHALK with MICRITE Major Lithology: Light greenish gray (10Y 6/1), bioturbated or finely laminated NANNOFOSSIL CHALK with MICRITE. QUARTZ, BIOCLASTS, FORAMINIFERS and CLAY occur subordinately. Minor Lithology: Dark greenish gray (10Y 4/1), poorly bedded, medium to fine sand-sized, BIOCLAST PACKSTONE with FORAMINIFERS. Normal grading and sharp bases occur locally.
	A/G	A/G				● 50.6% 1.90								



SITE 823 HOLE B CORE 55X CORED INTERVAL 516.8-526.4 mbsf

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK to MIXED SEDIMENT with MICRITE

Major Lithology: Bioturbated or finely laminated NANNOFOSSIL CHALK to MIXED SEDIMENT with MICRITE ranging in color from greenish gray (10Y 6/1) to dark greenish gray (10Y 4/1). Between Section 1 and 100 cm in Section 4, bedding planes are inclined and have suffered soft sediment deformation. Horizons with abundant mud clasts (matrix support?) ranging in size from several mm to 6 cm occur. Below these slump masses and debris deposits, the chalk is heavily bioturbated.

Minor Lithology: From Section 5 to CC, dark greenish gray (5GY 4/1), partially lithified BIOCLASTIC PACKSTONE layers with sharp bases, usually grading upward into a greenish gray (5GY 6/1), bioturbated NANNOFOSSIL CHALK with BIOCLASTS and CLAY.

SITE 823 HOLE B CORE 56X CORED INTERVAL 526.4-535.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/G	N18 - N19			UNCERTAIN POLARITY	● 47.7% 1.88	● 59.5%	1	0.5, 1.0				*
	A/G	CN10c				● 47.1% 1.98	● 63.4%	2					
						● 50.2% 1.93	● 66.4%	3					*
								4					
								5		VOID			
								6					
								7					
								CC					PAL

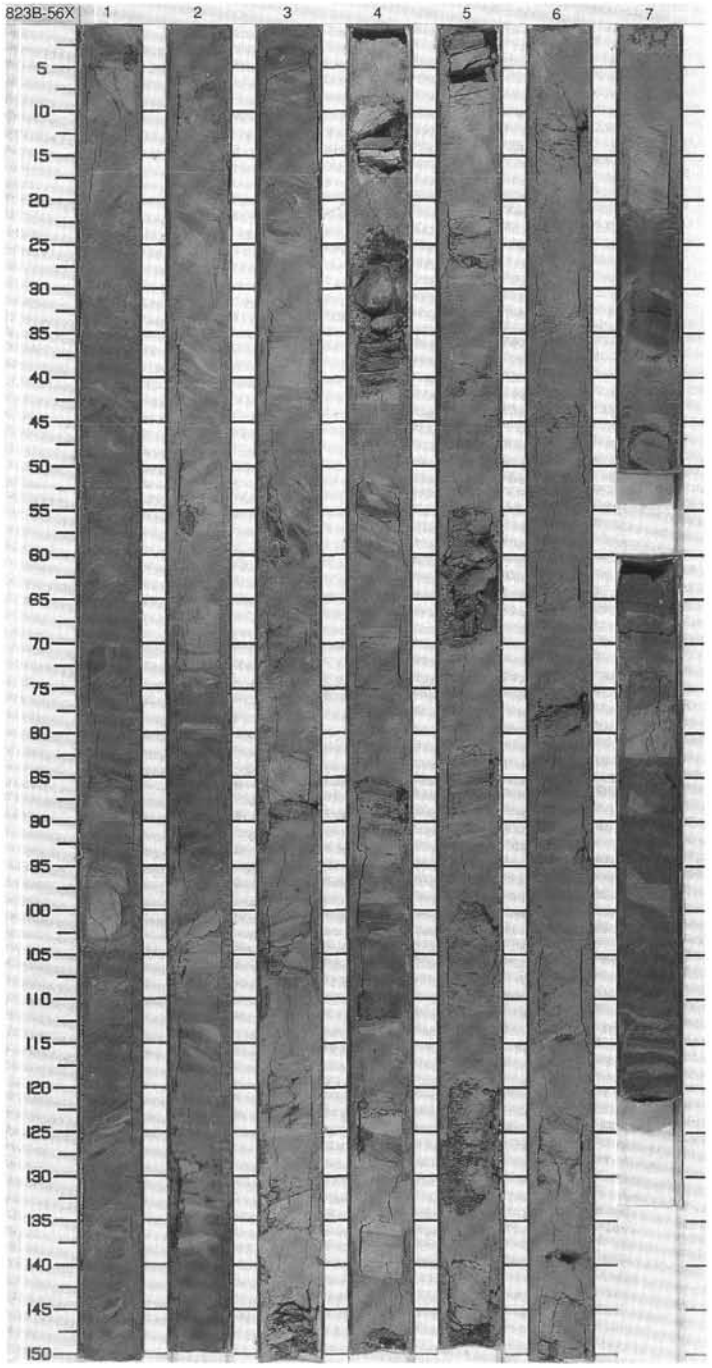
LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK with FORAMINIFERS and BIOCLASTS

Major Lithology: Finely laminated NANNOFOSSIL CHALK with FORAMINIFERS and BIOCLASTS. The lamination is due to the alternation of very thin dark greenish gray (10Y 5/1) laminae with thicker layers of light greenish gray (10Y 6/1) chalk. Horizons with isolated, well-rounded, flat chalk pebbles occur as well as isolated cm-sized slump folds. Major slumps comprise Sections 1-2, Section 3, the lower part of Section 5 to CC.

SMEAR SLIDE SUMMARY (%):

	1, 100 D	3, 23 D
COMPOSITION:		
Aragonite	Tr	Tr
Bioclast	15	10
Carbonate particles	5	5
Clay	---	10
Foraminifers	15	20
Micrite	---	10
Nannofossils	60	30
Quartz	5	15



SITE 823 HOLE B CORE 57X CORED INTERVAL 535.7-545.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/G	A/G			UNCERTAIN POLARITY	● 48.3% 1.91	● 66.6%	1	0.5			F	**
	N18 - N19	CN10c							1.0			F	*
												F	
								2					
						● 51.3% 2.01	● 71.8%	3					
								4					OG
					● 50.7% 2.00		● 70.2%	5					
								6					
								CC					PAL

LITHOLOGIC DESCRIPTION

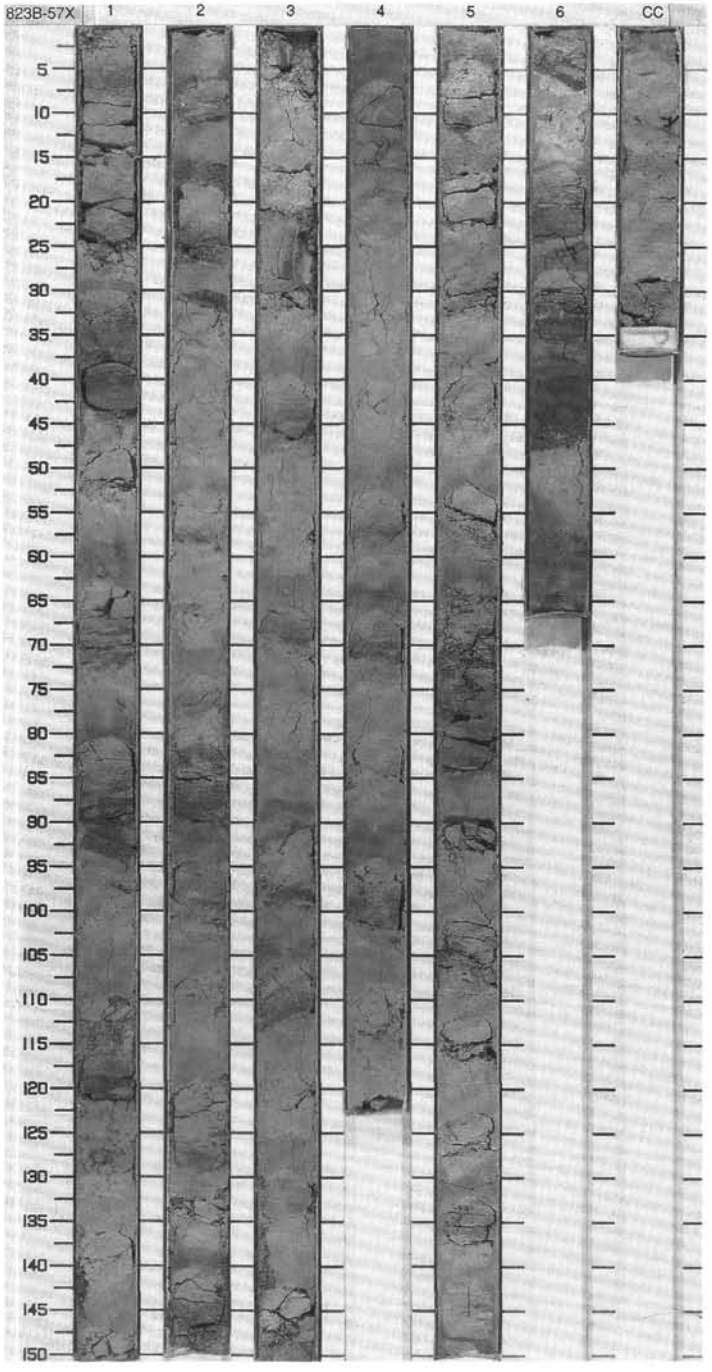
FORAMINIFER NANNOFOSSIL CHALK

Major Lithology: Light greenish gray (5GY 7/1) to light gray (5Y 7/1), bioturbated FORAMINIFER NANNOFOSSIL CHALK with variable amounts of BIOCLASTS.

Minor Lithology: Greenish gray (5GY 5/1 to 5Y 5/1), partially lithified, BIOCLASTIC FORAMINIFER to FORAMINIFER PACKSTONE, commonly showing fining-upward trends and sharp bases. This lithology grades further into greenish gray (5GY 5/1 to 5GY 6/1) heavily burrowed BIOCLASTIC NANNOFOSSIL CHALK. In many cases the packstone layer is missing and BIOCLASTIC CHALK is directly overlying the major lithology.

SMEAR SLIDE SUMMARY (%):

	1, 10 D	1, 20 D	1, 69 D
COMPOSITION:			
Bioclast	25	10	30
Calcite	---	10	---
Carbonate particles	---	---	5
Clay	10	---	10
Discoaster	5	---	Tr
Foraminifers	10	Tr	30
Micrite	10	---	---
Nannofossils	40	80	20
Quartz	Tr	---	5



SITE 823 HOLE B CORE 58X CORED INTERVAL 545.4-555.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/G N18 - N19	A/G CN10c			UNCERTAIN POLARITY	● 47.5% 2.05 ● 48.4% 2.02 ● 48.5% 2.12 ● 50.4% 2.05 ● 45.5% 2.02 ● 45.7% 2.04	● 56.4% ● 59.1% ● 56.1%	1 2 3 4 5 6 7 CC	0.5 1.0			SSS TW W	* * * PAL

LITHOLOGIC DESCRIPTION

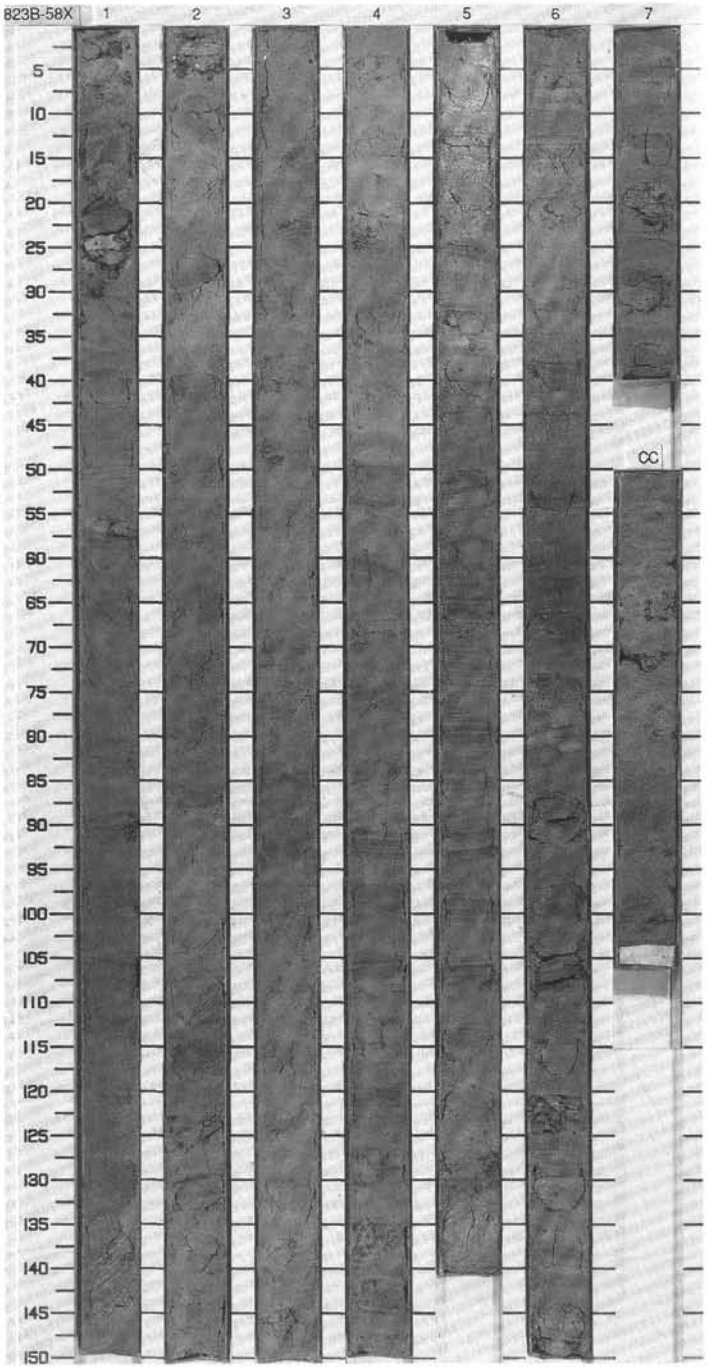
NANNOFOSSIL MIXED SEDIMENT to CHALK with FORAMINIFERS and BIOCLASTS

Major Lithology: Light greenish gray (5GY 7/1) NANNOFOSSIL MIXED SEDIMENT to CHALK with BIOCLASTS and FORAMINIFERS showing fine, planar, sometimes low angle wedge lamination. Small scale slump folds occur. In Sections 2 to the middle of Section 4, the content OF FORAMINIFERS, BIOCLASTS and CLAY is changing regularly on a 10cm scale, which gives rise to rhythmical color banding.

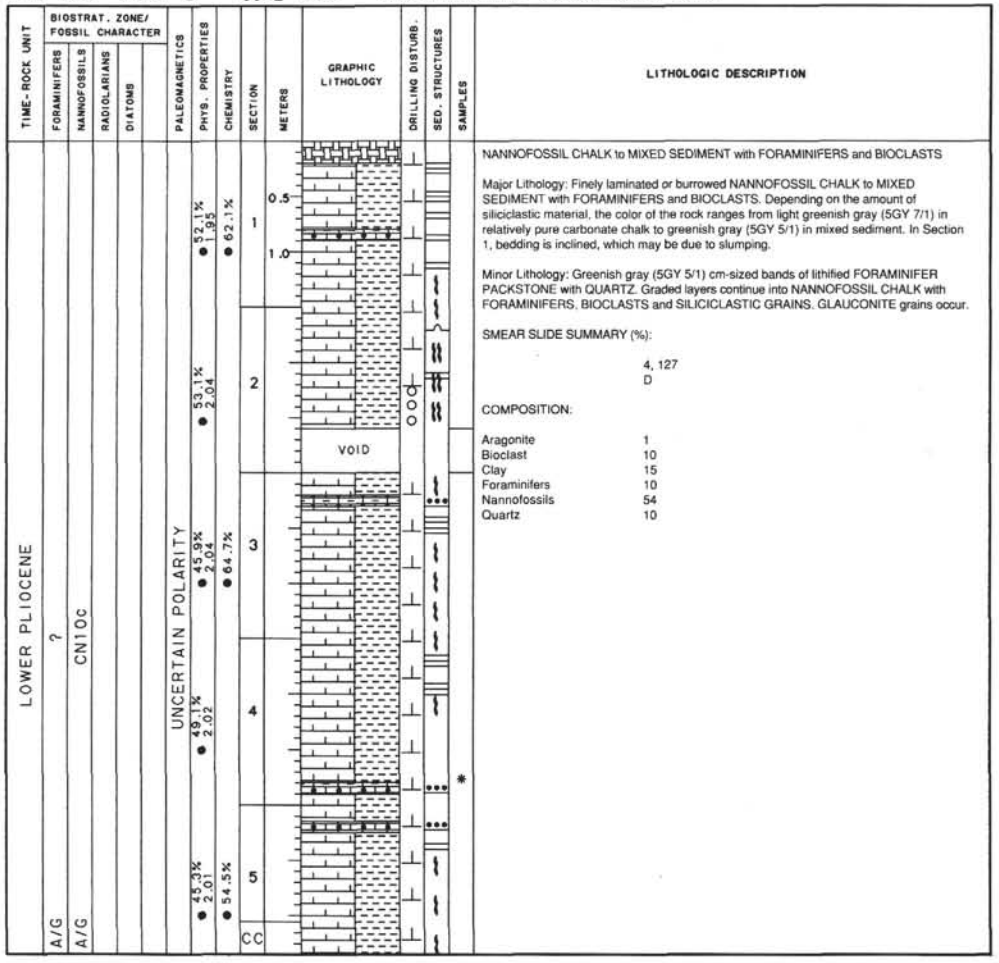
Minor Lithology: Layers of olive (5Y 6/2), partially lithified, BIOCLASTIC FORAMINIFER PACKSTONE occur in Sections 1 (5-23 cm), 3 (64-65 cm) and 4 (34-36 cm).

SMEAR SLIDE SUMMARY (%):

	1, 13 D	1, 100 D	2, 131 D
COMPOSITION:			
Aragonite	5	---	---
Bioclast	15	15	10
Clay	---	15	25
Discoaster	---	5	10
Foraminifers	---	5	---
Glauconite	Tr	---	---
Nannofossils	75	57	45
Quartz	2	3	10



SITE 823 HOLE B CORE 59X CORED INTERVAL 555.0-564.7 mbsf



LITHOLOGIC DESCRIPTION

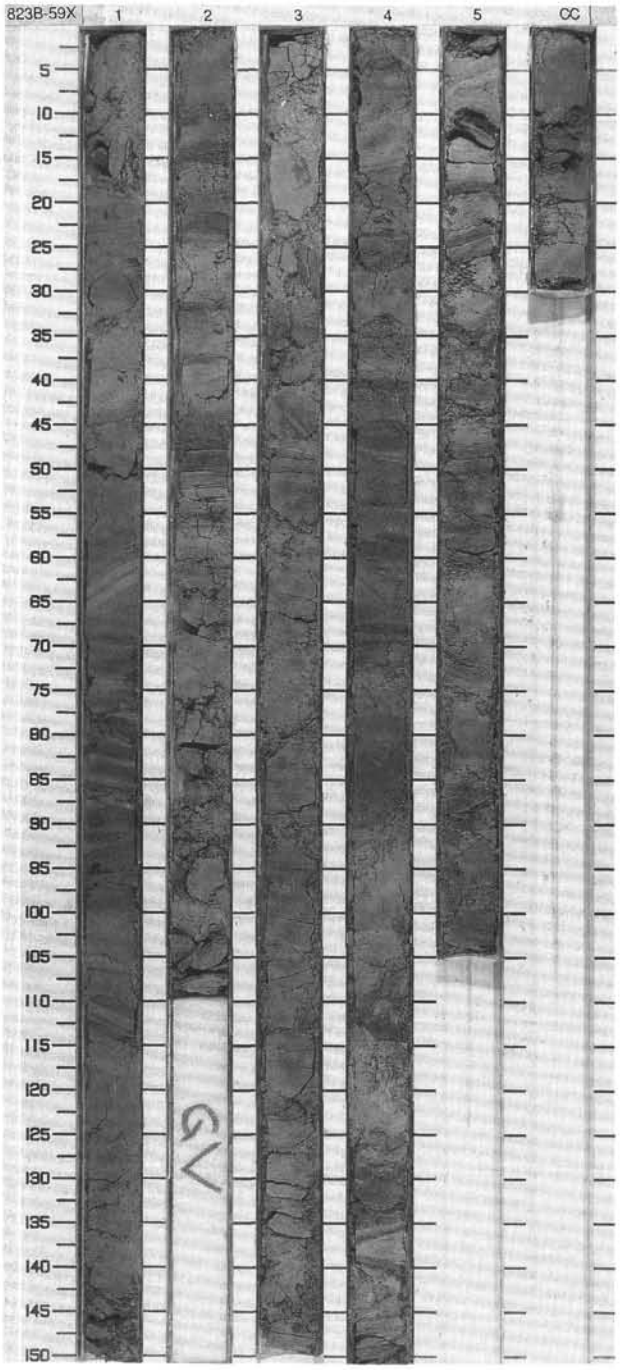
NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS

Major Lithology: Finely laminated or burrowed NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS. Depending on the amount of siliciclastic material, the color of the rock ranges from light greenish gray (5GY 7/1) in relatively pure carbonate chalk to greenish gray (5GY 5/1) in mixed sediment. In Section 1, bedding is inclined, which may be due to slumping.

Minor Lithology: Greenish gray (5GY 5/1) cm-sized bands of lithified FORAMINIFER PACKSTONE with QUARTZ. Graded layers continue into NANNOFOSSIL CHALK with FORAMINIFERS, BIOCLASTS and SILICICLASTIC GRAINS. GLAUCONITE grains occur.

SMEAR SLIDE SUMMARY (%):

	4, 127 D
COMPOSITION:	
Aragonite	1
Bioclast	10
Clay	15
Foraminifers	10
Nannofossils	54
Quartz	10



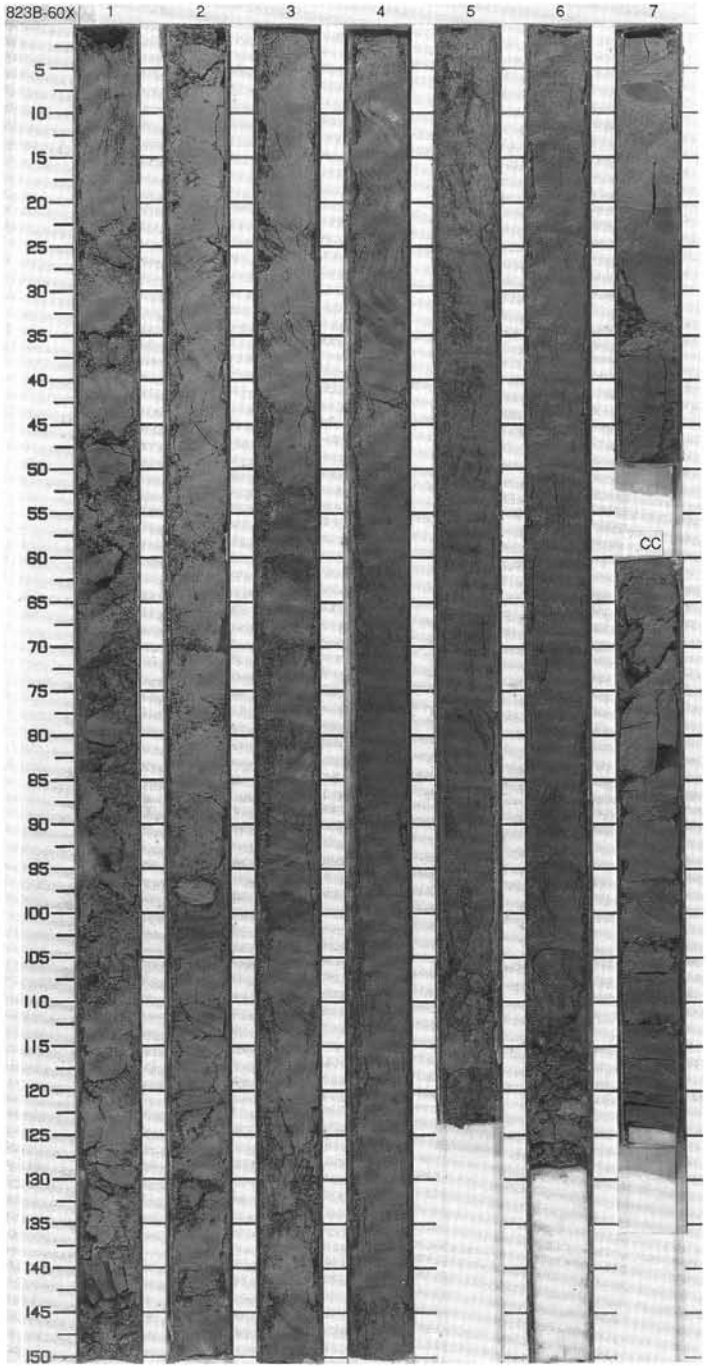
SITE 823 HOLE B CORE 60X CORED INTERVAL 564.7-574.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER PLIOCENE	?	CN10c			UNCERTAIN POLARITY	45.8% 2.07; 43.8% 2.07; 42.7% 2.05; 46.1% 2.00; 47.3% 2.14	64.7%; 54.4%; 62.1%	1; 2; 3; 4; 5; 6; 7; CC	0.5; 1.0	VOID			OG; PAL	NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS and FORAMINIFERS

Major Lithology: Gray (5Y 5/1), bioturbated or laminated NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS and FORAMINIFERS. Laminated parts of the core (below 100 cm in Section 2 to 60 cm in Section 4) are slumped. Another probable slump mass encompasses Sections 6 and 7.

SMEAR SLIDE SUMMARY (%):

	5, 59 D
Aragonite	1
Bioclast	5
Calcite	2
Clay	15
Foraminifers	1
Nannofossils	69
Quartz	5
Rock fragment	2



SITE 823 HOLE B CORE 61X CORED INTERVAL 574.3-583.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/M N18 - N19	A/G CN10c			UNCERTAIN POLARITY	43.7% 2.06; 45.5% 2.13; 43.3% 2.09; 46.2% 2.07; 50.6% 2.14	53.7%; 62.6%; 50.8%	1 2 3 4 5 6 7 CC	0.5 1.0				IW PAL

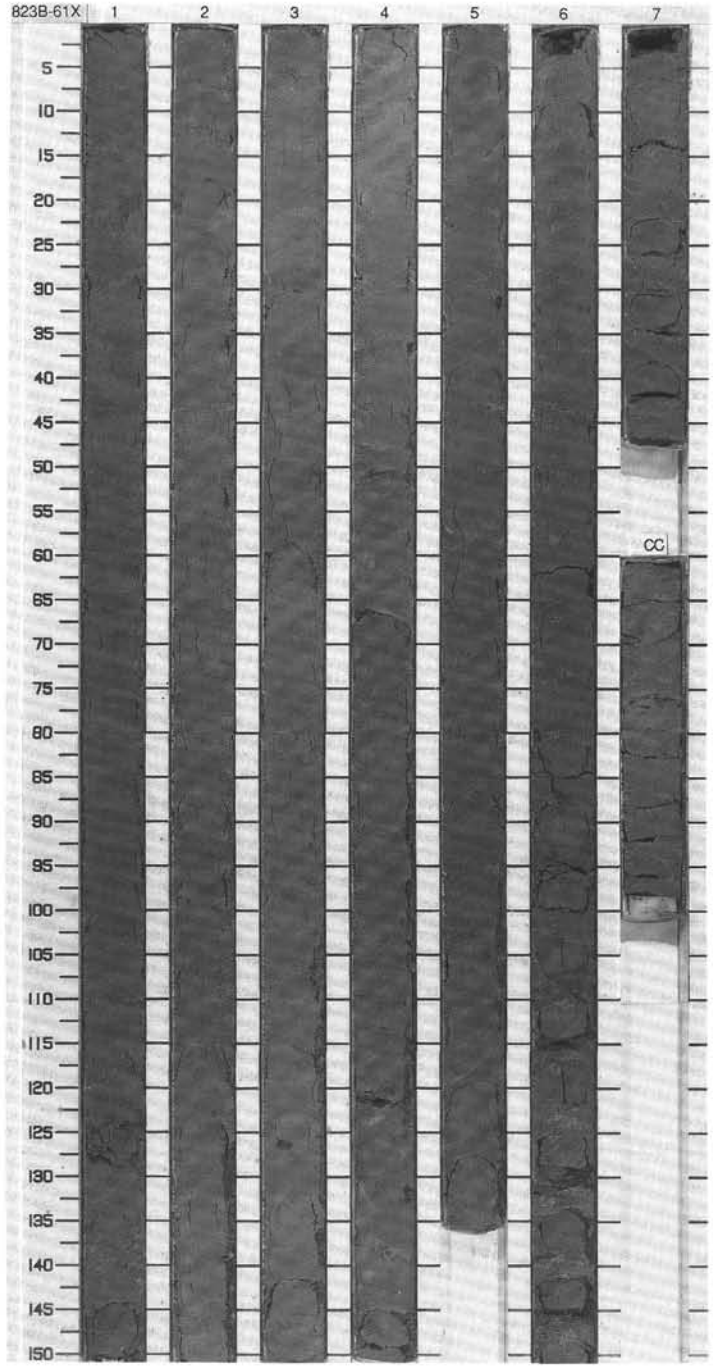
LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS

Major Lithology: Dark grayish green (5Y 4/1) slightly bioturbated CLAYEY NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS. Slumping occurs in two layers in Section 4 (40-65 cm, 120-150 cm) and in the CC.

SMEAR SLIDE SUMMARY (%):

	2, 108 D
COMPOSITION:	
Bioclast	15
Calcite	5
Clay	25
Foraminifers	10
Mica	2
Nannofossils	30
Quartz	10
Rock fragment	3



SITE 823 HOLE B CORE 62X CORED INTERVAL 583.9-593.6 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER
- FORAMINIFERS: A/G N18 - N19
- NANNOFOSSILS: A/G CN10c
- RADIOLARIANS
- DIATOMS

PALEOMAGNETICS: UNCERTAIN POLARITY

PHYS. PROPERTIES
- 45.1% 2.10
- 48.1% 1.99
- 45.0% 2.00
- 43.9% 2.08
- 42.6% 2.09
- 39.7% 2.11

CHEMISTRY
- 71.4%
- 50.4%
- 32.2%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

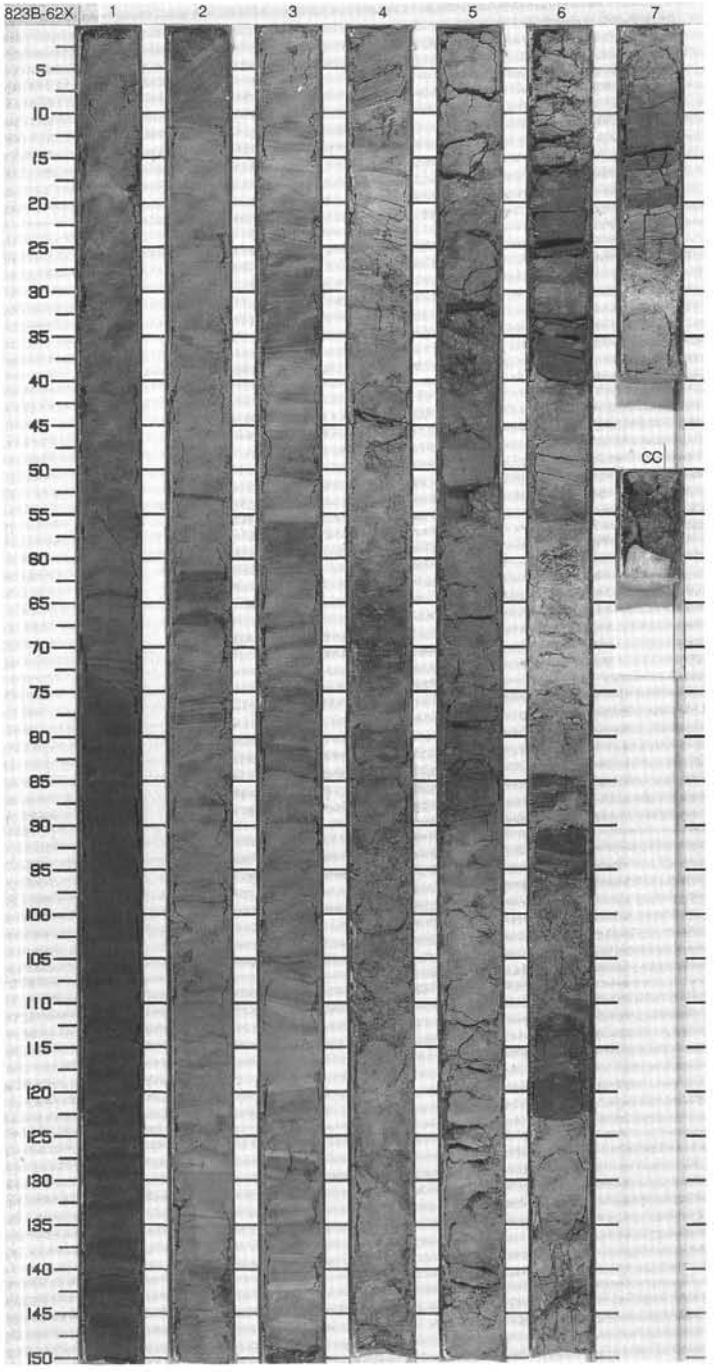
CLAYEY NANNOFOSSIL CHALK to MUDSTONE with QUARTZ and BIOCLASTS to NANNOFOSSIL CHALK with CLAY, QUARTZ and BIOCLASTS

Major Lithology: Dark gray (5Y 4/1), finely laminated CLAYEY NANNOFOSSIL CHALK to MUDSTONE with BIOCLASTS and QUARTZ to gray (5Y 6/1) NANNOFOSSIL CHALK with CLAY, QUARTZ and BIOCLASTS. In places the sediment is heavily burrowed. Soft sediment deformation occurs in various intervals (Section 1: 30-70 cm, Section 2: 0-45cm, 105-130 cm, Section 3: 20-40 cm).

Minor Lithology: Gray (5GY 5/1) FORAMINIFER BIOCLAST PACKSTONE ranging in grain size from upper medium sand to upper fine sand (Section 4: 70-74 cm, Section 5: 30-47 cm, 76-89 cm, Section 6: 10-25 cm, 27-39 cm, 39-84 cm, Section 7: 13-15 cm, CC: 0-10 cm).

SMEAR SLIDE SUMMARY (%):

	1, 123 D	2, 128 D
COMPOSITION:		
Bioclast	20	1
Calcite	15	---
Clay	30	10
Glauconite	Tr	---
Micrite	---	8
Nannofossils	15	80
Quartz	15	1



SITE 823 HOLE B CORE 63X CORED INTERVAL 593.6-603.2 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N18 - N19; NANNOFOSSILS A/G CN10b; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: UNCERTAIN POLARITY

PHYS. PROPERTIES: • 44.7% 2.06; • 45.0% 2.04; • 47.5% 2.02; • 47.65 2.02; • 40.3% 2.07; • 47.6% 2.04

CHEMISTRY: • 64.0%; • 77.5%; • 66.8%

SECTION: 1, 2, 3, 4, 5, 6, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: PAL

LITHOLOGIC DESCRIPTION

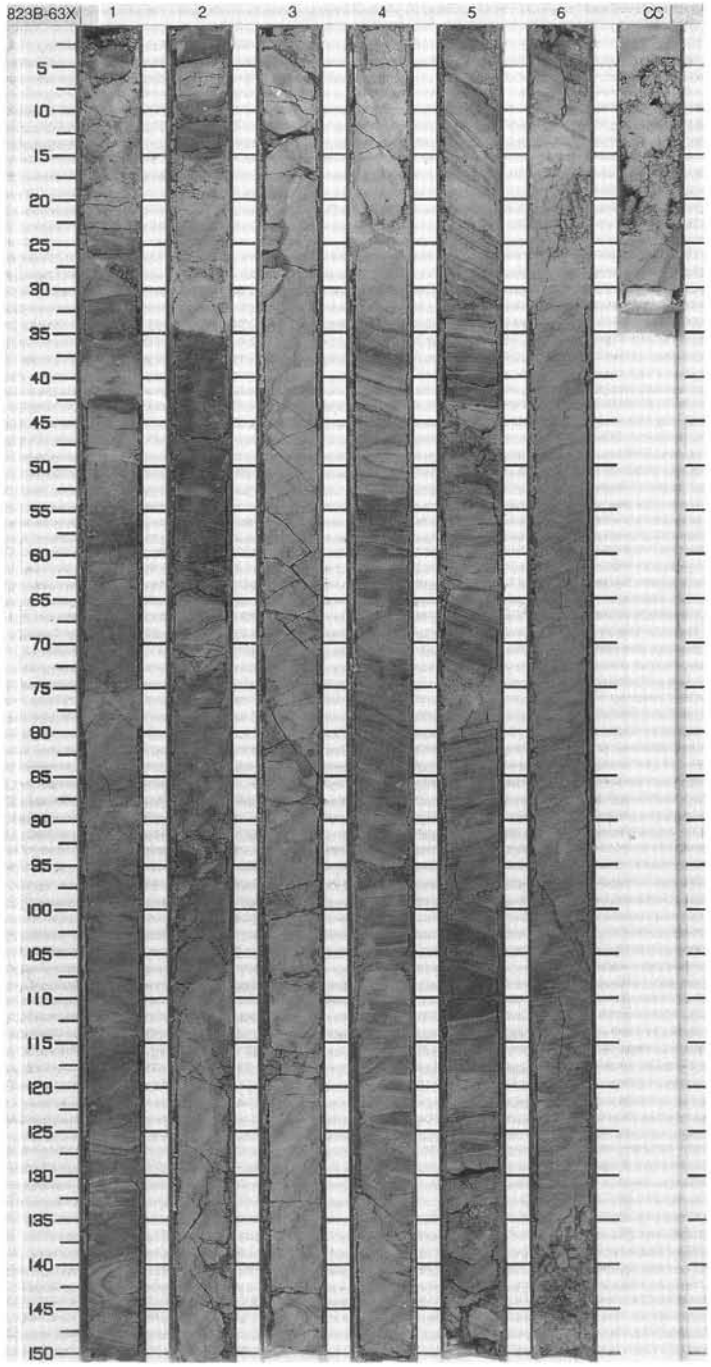
NANNOFOSSIL CHALK to CLAYEY NANNOFOSSIL CHALK

Major Lithology: Gray (5Y 5/1) CLAYEY NANNOFOSSIL CHALK to light gray (5Y 6/1) NANNOFOSSIL CHALK, finely laminated. The core is slumped from 100 cm to 150 cm in Section 1, from Section 2: 60 cm downcore to the core catcher.

Minor Lithology: Gray (5GY 5/1) FORAMINIFER BIOCLAST PACKSTONE layers, which probably represent turbidites.

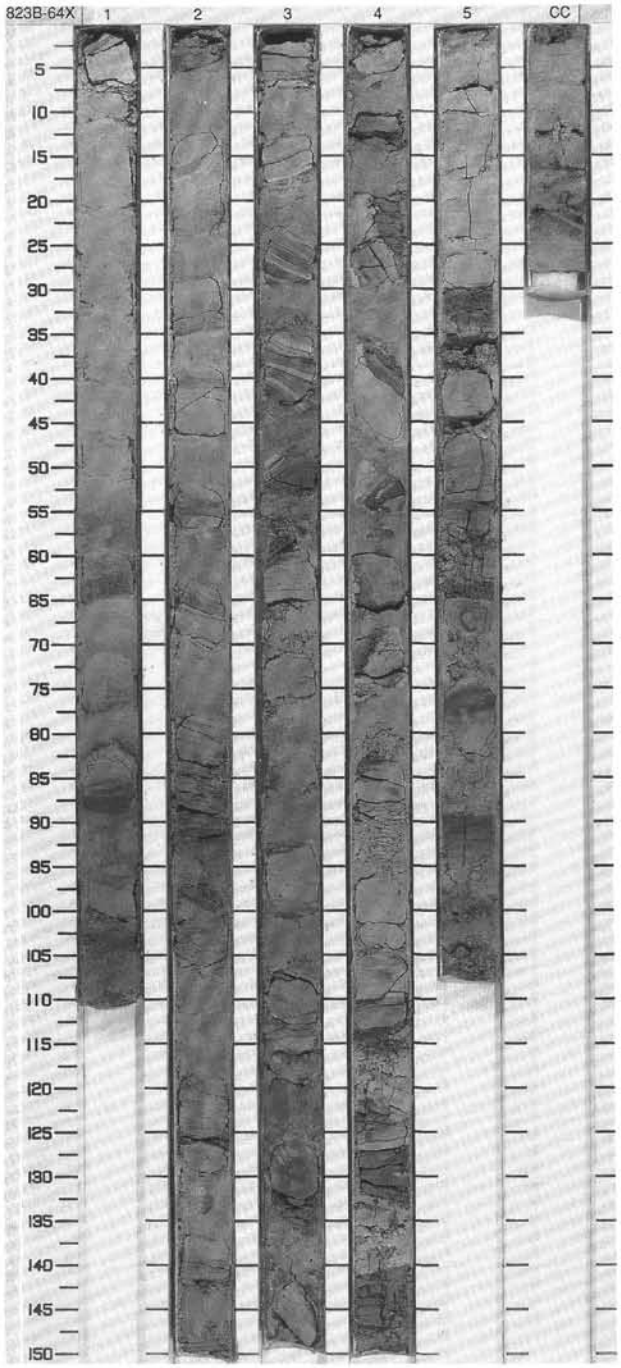
SMEAR SLIDE SUMMARY (%):

	3, 133 D
COMPOSITION:	
Bioclast	15
Calcite	5
Clay	10
Foraminifers	10
Nannofossils	55
Quartz	5

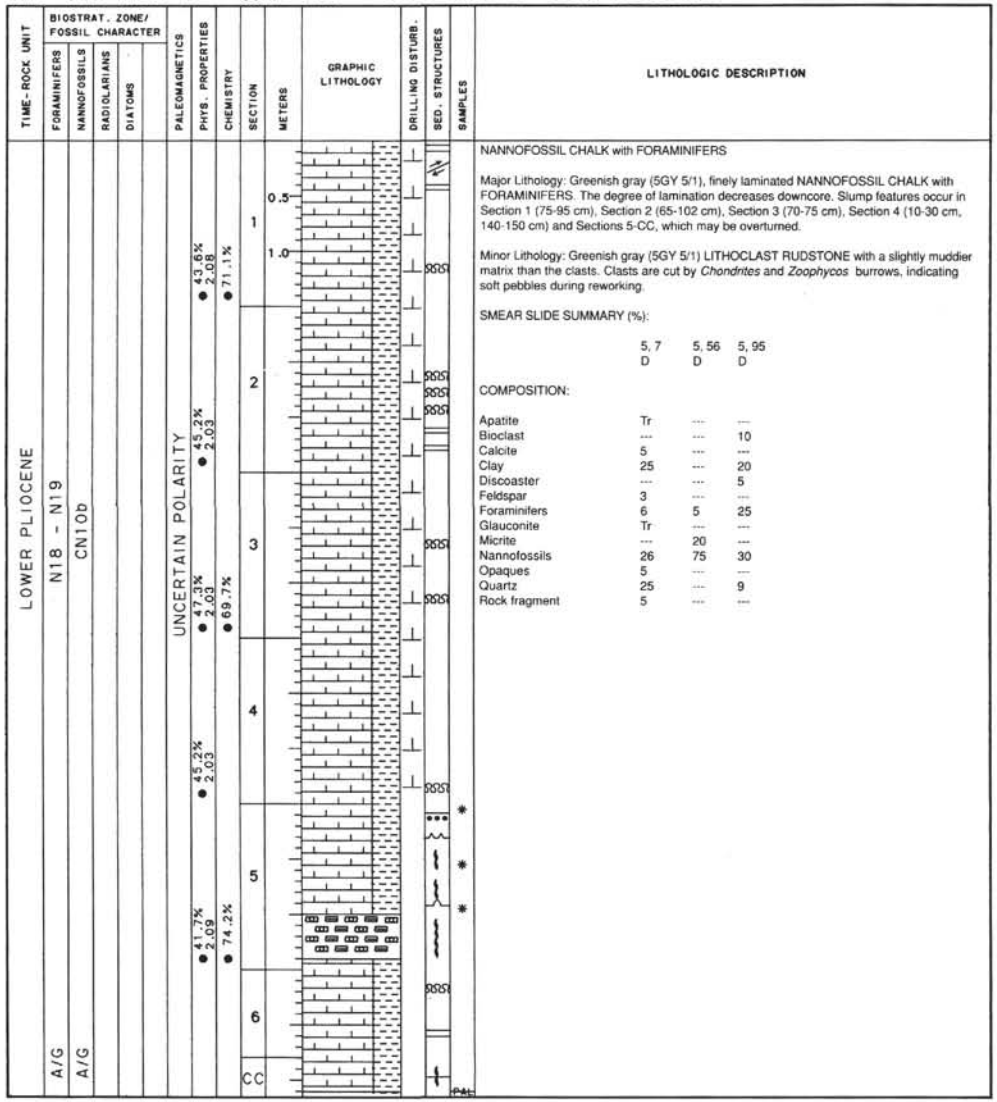


SITE 823 HOLE B CORE 64X CORED INTERVAL 603.2-612.8 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
LOWER PLIOCENE	A/G	N18 - N19	A/G	CN10b	UNCERTAIN POLARTIY	● 49.1% 1.97 ● 48.3% 2.01 ● 44.2% 2.08	● 70.9% ● 72.6% ● 66.0%	1 2 3 4 5 CC	0.5 1.0				OG TW PAL	NANNOFOSSIL CHALK with FORAMINIFERS Major Lithology: Gray (5Y 5/1) bioturbated or laminated NANNOFOSSIL CHALK with FORAMINIFERS; slumped. Minor Lithology: BIOCLAST FORAMINIFER PACKSTONE with a sharp base and coarse top occurs in Section 5 (30 cm). The intensity of bioturbation increases downward, which may indicate an overturned turbidite (slumping).



SITE 823 HOLE B CORE 65X CORED INTERVAL 612.8-622.5 mbsf



LITHOLOGIC DESCRIPTION

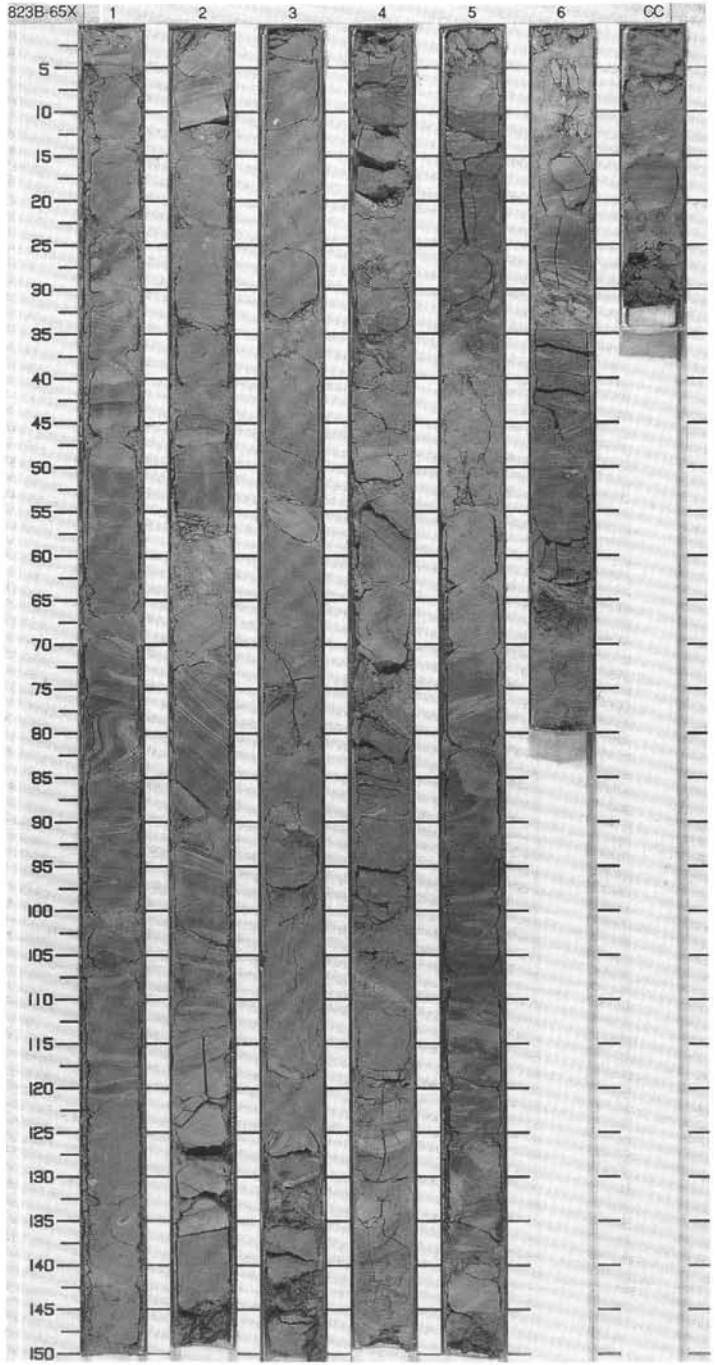
NANNOFOSSIL CHALK with FORAMINIFERS

Major Lithology: Greenish gray (5GY 5/1), finely laminated NANNOFOSSIL CHALK with FORAMINIFERS. The degree of lamination decreases downcore. Slump features occur in Section 1 (75-95 cm), Section 2 (65-102 cm), Section 3 (70-75 cm), Section 4 (10-30 cm, 140-150 cm) and Sections 5-CC, which may be overturned.

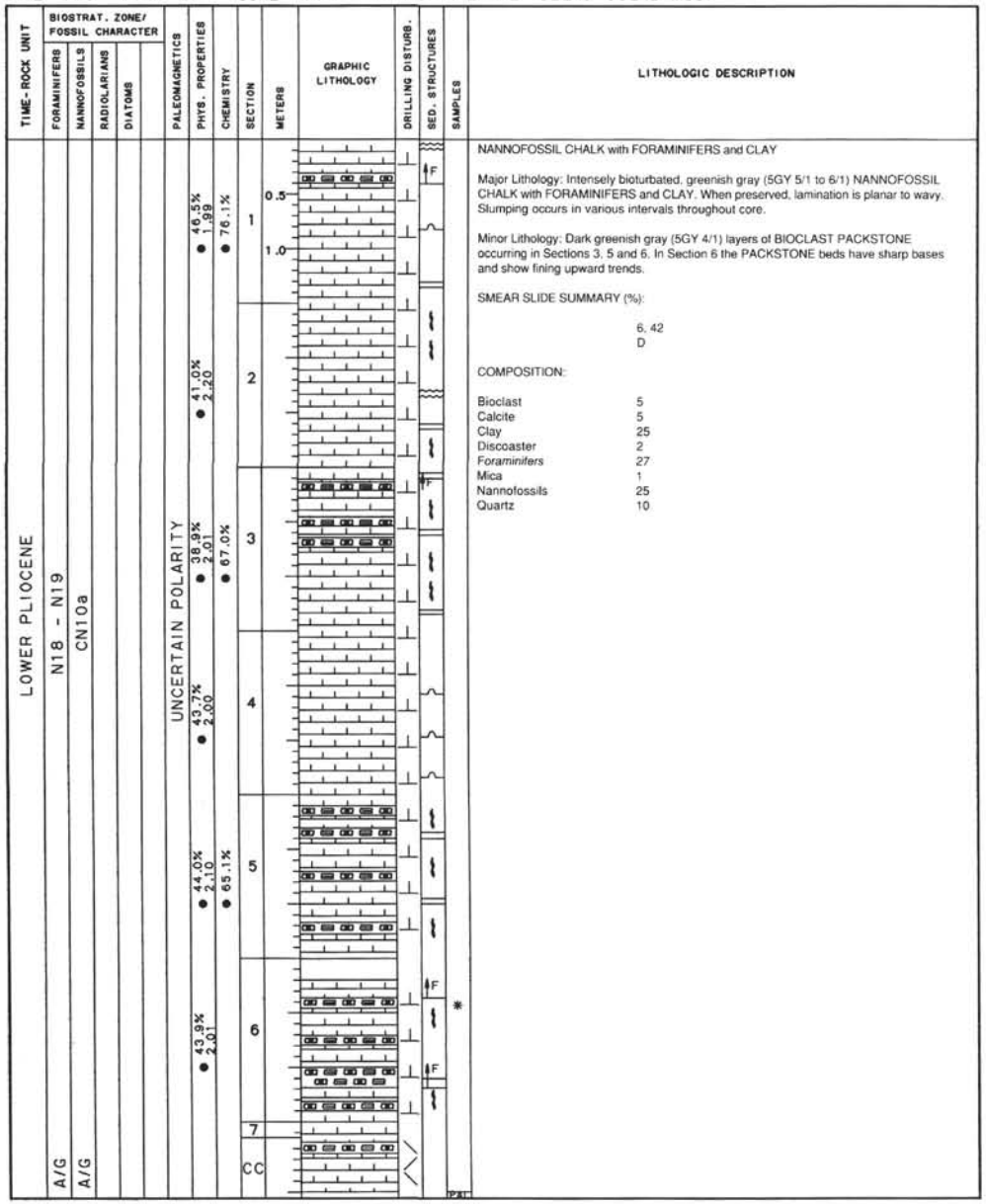
Minor Lithology: Greenish gray (5GY 5/1) LITHOCLAST RUDSTONE with a slightly muddier matrix than the clasts. Clasts are cut by *Chondrites* and *Zoophycos* burrows, indicating soft pebbles during reworking.

SMEAR SLIDE SUMMARY (%):

	5, 7 D	5, 56 D	5, 95 D
COMPOSITION:			
Apatite	Tr	---	---
Bioclast	---	---	10
Calcite	5	---	---
Clay	25	---	20
Discoaster	---	---	5
Feldspar	3	---	---
Foraminifers	6	5	25
Glauconite	Tr	---	---
Micrite	---	20	---
Nannofossils	26	75	30
Opaques	5	---	---
Quartz	25	---	9
Rock fragment	5	---	---



SITE 823 HOLE B CORE 66X CORED INTERVAL 622.5-632.2 mbsf



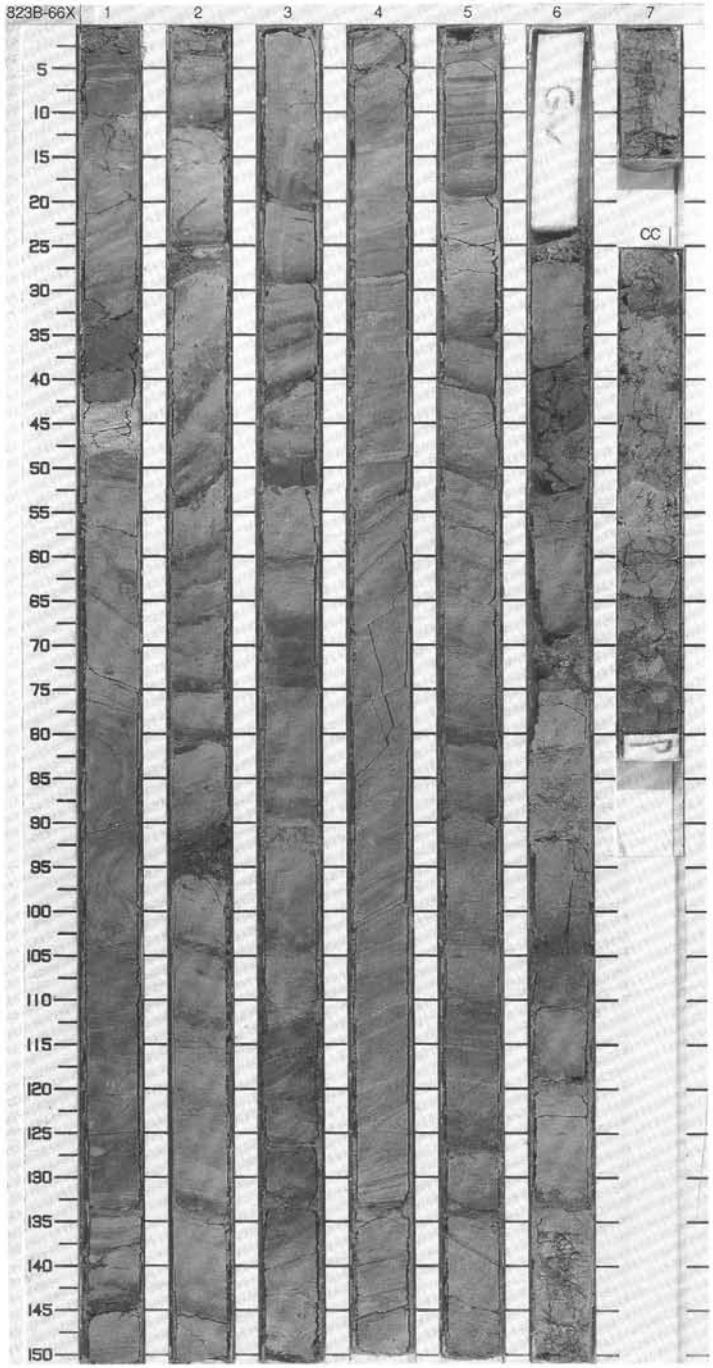
NANNOFOSSIL CHALK with FORAMINIFERS and CLAY

Major Lithology: Intensely bioturbated, greenish gray (5GY 5/1 to 6/1) NANNOFOSSIL CHALK with FORAMINIFERS and CLAY. When preserved, lamination is planar to wavy. Slumping occurs in various intervals throughout core.

Minor Lithology: Dark greenish gray (5GY 4/1) layers of BIOCLAST PACKSTONE occurring in Sections 3, 5 and 6. In Section 6 the PACKSTONE beds have sharp bases and show fining upward trends.

SMEAR SLIDE SUMMARY (%):

	6, 42 D
COMPOSITION:	
Bioclast	5
Calcite	5
Clay	25
Discoaster	2
Foraminifers	27
Mica	1
Nannofossils	25
Quartz	10



SITE 823 HOLE B CORE 67X CORED INTERVAL 632.2-641.6 mbsf

TIME-ROCK UNIT: LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N18 - N19; NANNOFOSSILS A/M CN10a; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: UNCERTAIN POLARITY

PHYS. PROPERTIES: ● 46.9% 2.01; ● 41.6% 2.03; ● 43.3% 2.02; ● 40.2% 2.13; ● 44.4% 2.06; ● 46.6% 2.09

CHEMISTRY: ● 83.5%; ● 65.1%; ● 48.7%; ● 60.6%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: *, *

SAMPLES: OG, IW, PAL

LITHOLOGIC DESCRIPTION

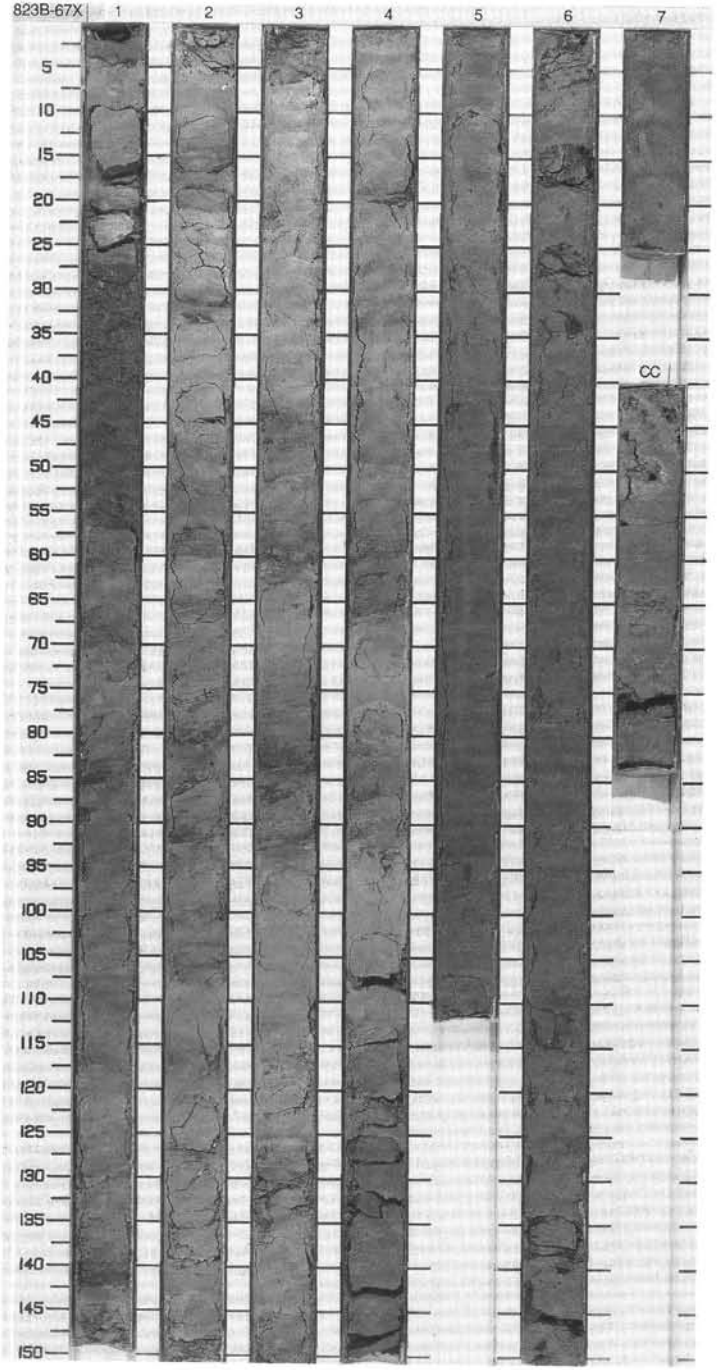
NANNOFOSSIL CHALK to FORAMINIFER NANNOFOSSIL CLAYEY CHALK to NANNOFOSSIL MIXED SEDIMENT.

Major Lithology: Light greenish gray to dark greenish gray (5GY 4/1 to 5GY 6/1), bioturbated, NANNOFOSSIL CHALK to FORAMINIFER NANNOFOSSIL CLAYEY CHALK to NANNOFOSSIL MIXED SEDIMENT.

Minor Lithology: Dark greenish gray (5GY 4/1) PACKSTONE.

SMEAR SLIDE SUMMARY (%):

	4, 92 D	6, 100 D
COMPOSITION:		
Bioclast	---	3
Calcite	5	1
Clay	20	30
Foraminifers	5	25
Nannofossils	69	36
Quartz	1	5



SITE 823 HOLE B CORE 68X CORED INTERVAL 641.6-650.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
LOWER PLIOCENE	A/G	A/M			UNCERTAIN POLARITY	● 40.7% 2.04	● 41.7% 2.08	● 44.0% 2.13	● 42.7% 2.10	● 39.4% 2.04	● 40.2% 2.02	● 50.7% ● 51.6% ● 51.4%	1	0.5					
	N18 - N19	CN9											1	1.0					
													2						
													3						
													4						*
													5					SSS	
													6						
													7						
													CC						

LITHOLOGIC DESCRIPTION

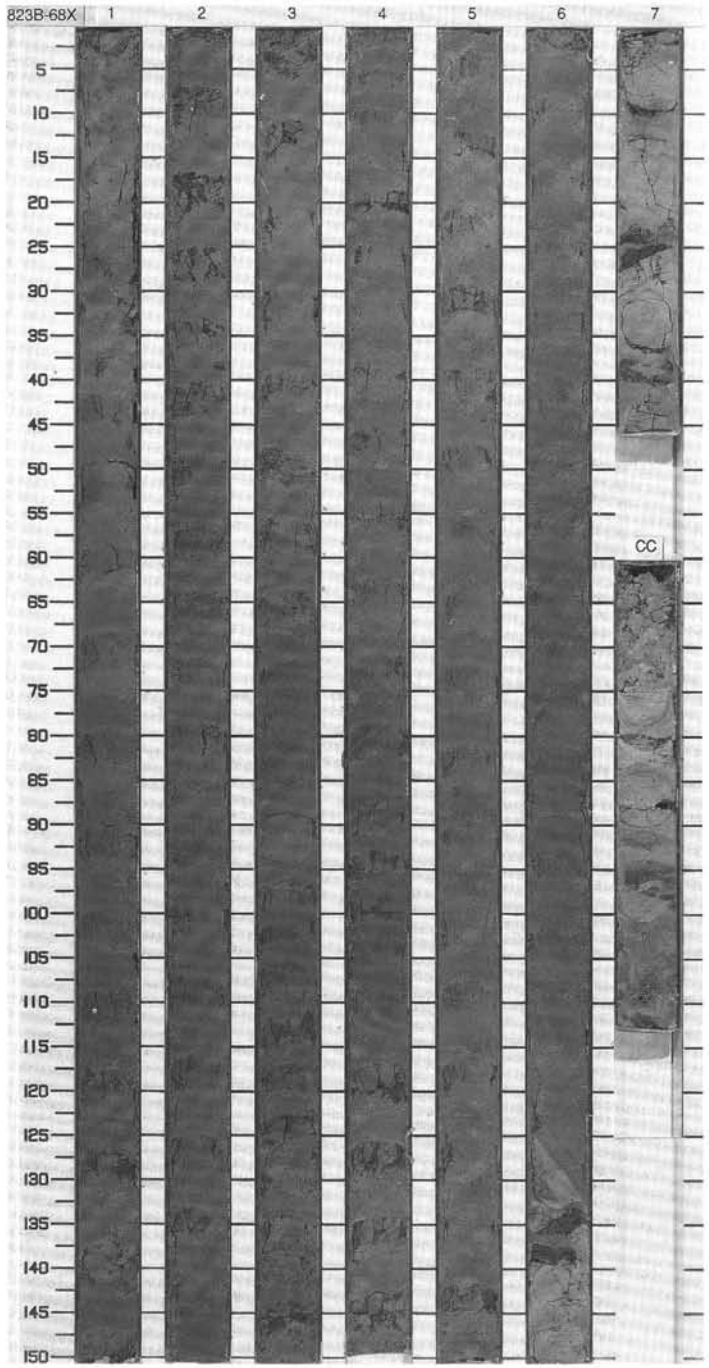
FORAMINIFER NANNOFOSSIL CLAYEY MIXED SEDIMENT

Major Lithology: Light greenish gray to dark greenish gray (5GY 4/1 to 5GY 6/1), bioturbated FORAMINIFER NANNOFOSSIL CLAYEY MIXED SEDIMENT. Some burrows are filled with monosulphides.

Minor Lithology: Light greenish gray to dark greenish gray (5GY 4/1 to 5GY 6/1), laminated FORAMINIFER NANNOFOSSIL CLAYEY MIXED SEDIMENT occurs in some pieces in Sections 3,4 and 6.

SMEAR SLIDE SUMMARY (%):

	4, 65 D
COMPOSITION:	
Bioclast	2
Calcite	8
Clay	21
Foraminifers	25
Nannofossils	35
Pyrite	1
Quartz	5



SITE 823 HOLE B CORE 69X CORED INTERVAL 650.9-660.0 mbsf

TIME-ROCK UNIT: UPPER MIOCENE LOWER PLIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS N18 - N19; NANNOFOSSILS CN9; RADIOLARIANS A/G; DIATOMS A/M

PALEOMAGNETICS: UNCERTAIN POLARITY

PHYS. PROPERTIES: ● 37.7% 2.10; ● 41.6% 2.09; ● 44.5% 2.18; ● 41.6% 2.09; ● 45.2% 2.07; ● 45.2% 2.03

CHEMISTRY: ● 78.7%; ● 80.1%; ● 84.6%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: PAL

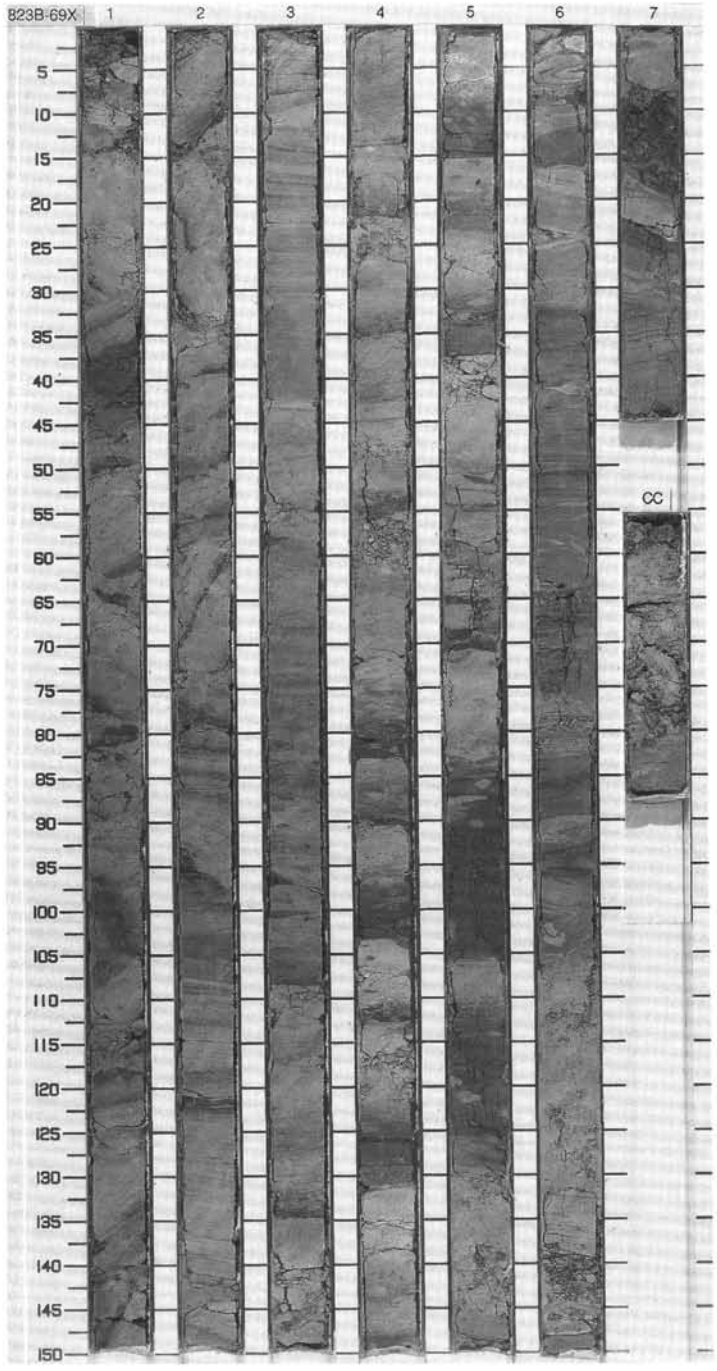
LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK with FORAMINIFERS and FORAMINIFER BIOCLASTIC PACKSTONE to PACKSTONE to NANNOFOSSIL CHALK with FORAMINIFERS and BIOCLASTS

Major Lithology: Gray (5GY 5/1), bioturbated NANNOFOSSIL CHALK with FORAMINIFERS in Sections 1 to 4; and dark greenish gray (5GY 4/1) FORAMINIFER BIOCLASTIC PACKSTONE with well defined parallel laminations grading up into extensively burrowed dark greenish gray (5GY 4/1) (burrows 5GY 6/1) silt-sized PACKSTONE which in turn grades up into gray (5GY 5/1 to 6/1) bioturbated NANNOFOSSIL CHALK with FORAMINIFERS and BIOCLASTS. These intervals are interpreted as turbidites. They first occur in Section 4 and increase in frequency in Section 5. Section 6 consists of laminated and locally contorted silt- to fine sand-size NANNOFOSSIL CHALK with FORAMINIFERS.

SMEAR SLIDE SUMMARY (%):

	3, 25 D	3, 95 D	5, 101 D
COMPOSITION:			
Bioclast	8	Tr	10
Calcite	10	1	10
Carbonate particles	---	10	---
Clay	20	15	8
Discoaster	2	---	1
Feldspar	---	---	1
Foraminifers	20	5	25
Glass	---	---	4
Glauconite	---	---	4
Mica	---	---	2
Nannofossils	36	61	22
Opaques	---	1	---
Pyrite	---	---	3
Quartz	4	5	8
Rock fragment	---	---	2



SITE 823 HOLE B CORE 70X CORED INTERVAL 660.0-670.3 mbsf

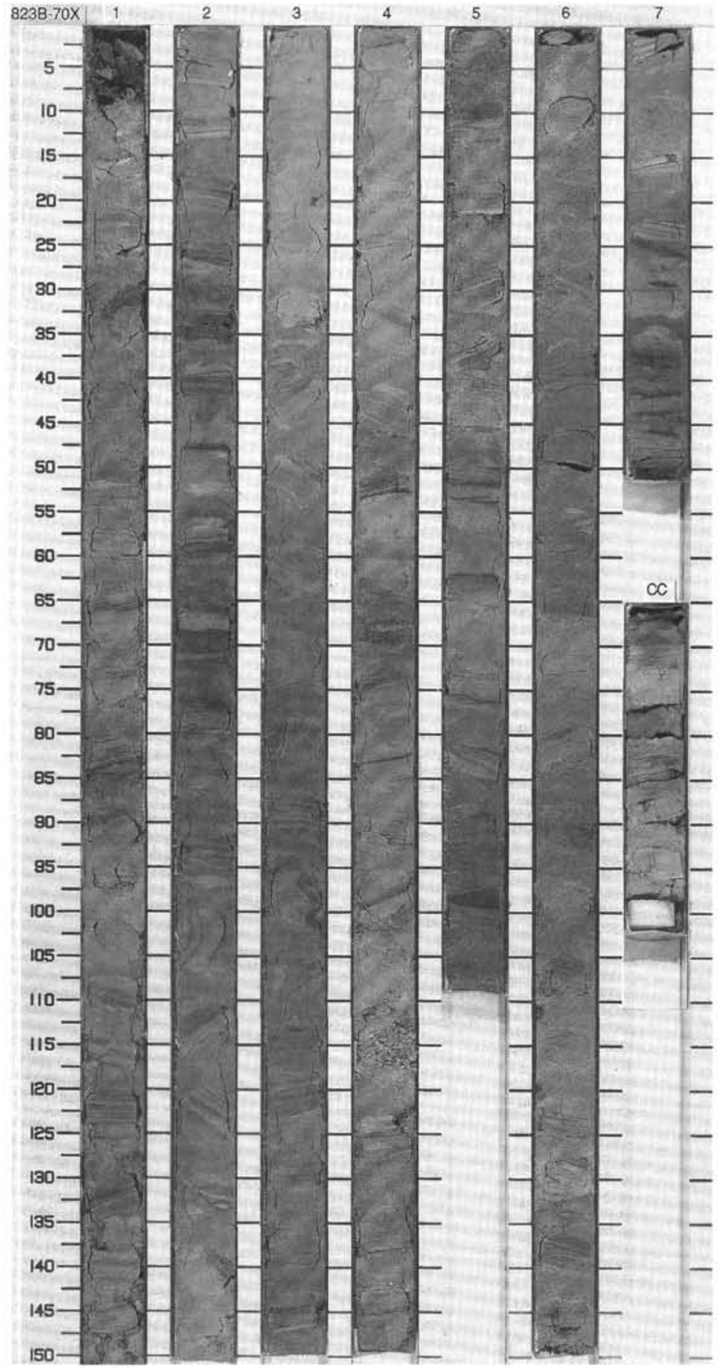
TIME-ROCK UNIT	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	N18 - N19	CN9			UNCERTAIN POLARITY	● 40.4% 2.12; ● 37.0% 2.20; ● 40.1% 1.98; ● 41.1% 2.10; ● 40.7% 1.98	● 74.5%; ● 59.2%; ● 56.1%; ● 66.1%	1, 2, 3, 4, 5, 6, 7, CC	0.5, 1.0				OG, IW, PAL	
	A/M	A/P												

BIOSTRAT. ZONE/ FOSSIL CHARACTER

NANNOFOSSIL CHALK to MIXED SEDIMENT

Major Lithology: Gray to dark gray (5GY 4/1 to 6/1), laminated NANNOFOSSIL CHALK to MIXED SEDIMENT. Some pieces have contorted bedding.

Minor Lithology: Dark gray (5GY 4/1) BIOCLASTIC FORAMINIFER PACKSTONE forming the basal portion of a turbidite (Section 2, Pieces 5, 8 and 10).



SITE 823 HOLE B CORE 71X CORED INTERVAL 670.3-679.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/M	A/M			UNCERTAIN POLARITY	41.2% 2.13	85.0%	6					
	N16 - N17	CN9				38.6% 2.11		5					
						42.5% 2.10	80.4%	4					
						45.3% 2.04		3					
						44.1% 2.08		2					
						39.4% 2.10	88.1%	1	0.5 1.0				
								7					
								CC					

LITHOLOGIC DESCRIPTION

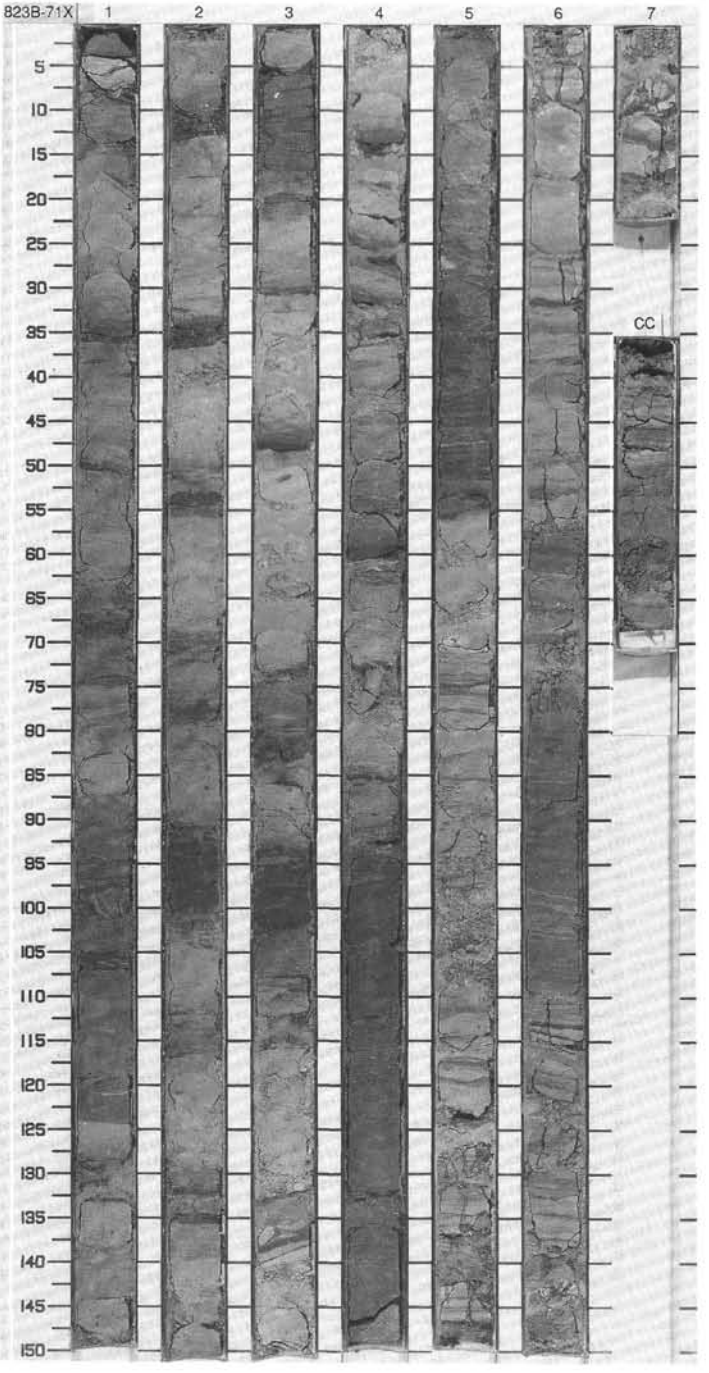
NANNOFOSSIL CHALK with FORAMINIFERS and BIOCLASTIC PACKSTONE with QUARTZ

Major Lithology: Greenish gray (5GY 6/1), bioturbated NANNOFOSSIL CHALK with FORAMINIFERS. These sediments are locally laminated and sometimes contorted.

Minor Lithology: Dark gray (5GY 4/1) BIOCLASTIC PACKSTONE with QUARTZ form the base of numerous fining-upward cycles that are interpreted as turbidite beds.

SMEAR SLIDE SUMMARY (%):

	6, 96 D	7, 12 D
OMPOSITION:		
Bioclast	8	10
Calcite	10	12
Clay	20	20
Discoaster	3	---
Dolomite	Tr	---
Foraminifers	15	30
Nannofossils	40	22
Quartz	4	6



SITE 823 HOLE B CORE 72X CORED INTERVAL 679.9-689.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/G N16 - N17	A/M CN9			UNCERTAIN POLARITY	● 38.5% 2.10	● 41.1% 2.09	● 38.1%	CC	7	6	5	4	3	2	1	0.5 1.0					PAL

LITHOLOGIC DESCRIPTION

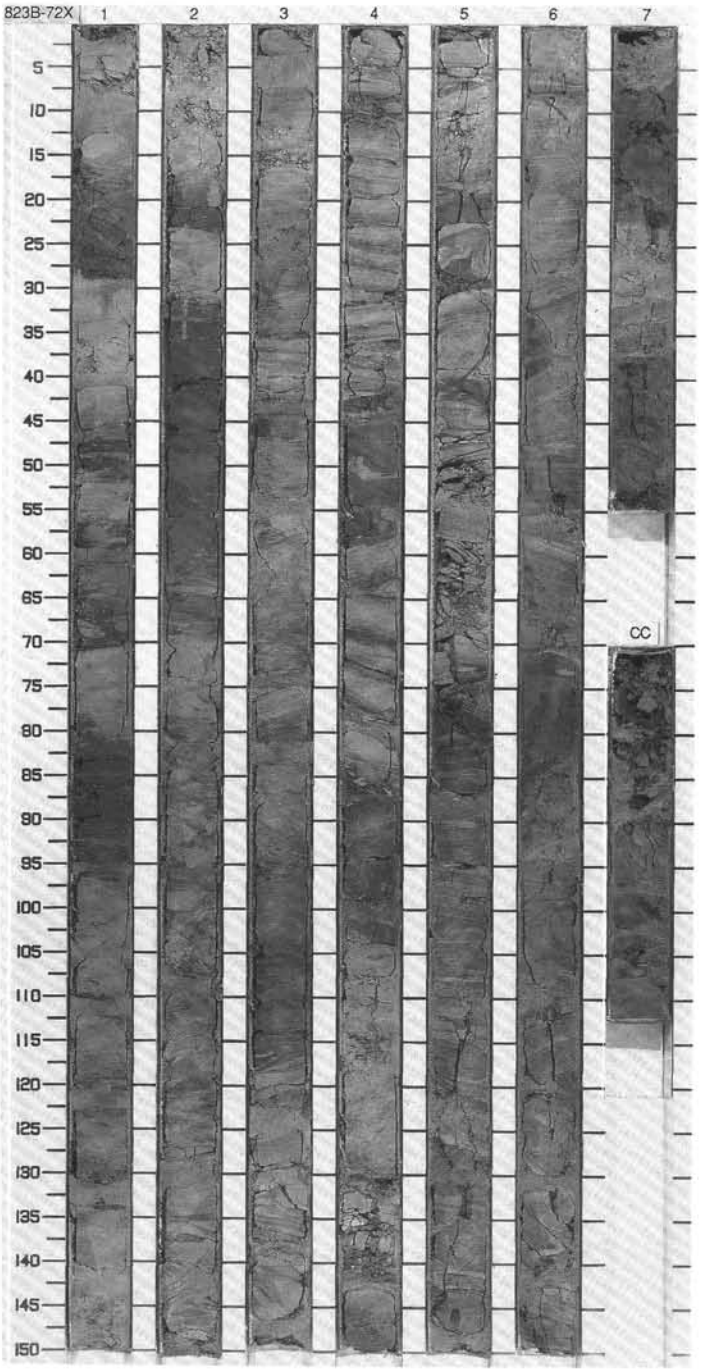
FORAMINIFER BIOCLASTIC NANNOFOSSIL PACKSTONE to NANNOFOSSIL MIXED SEDIMENT

Major Lithology: Greenish gray to gray, stacked turbidites consisting of basal FORAMINIFER BIOCLASTIC NANNOFOSSIL PACKSTONE that grade up into bioturbated NANNOFOSSIL MIXED SEDIMENT, complexly intermixed with greenish gray to dark gray laminated NANNOFOSSIL MIXED SEDIMENT. In Sections 5 and 7 these laminated sediments are contorted.

Minor Lithology: Section 2, 48-70 and 80-150 cm; Section 3, 47-80 and 98-105 cm: greenish gray to dark greenish gray, highly disturbed, NANNOFOSSIL CHALK to MIXED SEDIMENT with mud lumps and contorted bedding that are interpreted as debris flows. There are also slumps in Sections 3 (127-150 cm), 4 (0-8 cm) and 5 (22-46 cm).

SMEAR SLIDE SUMMARY (%):

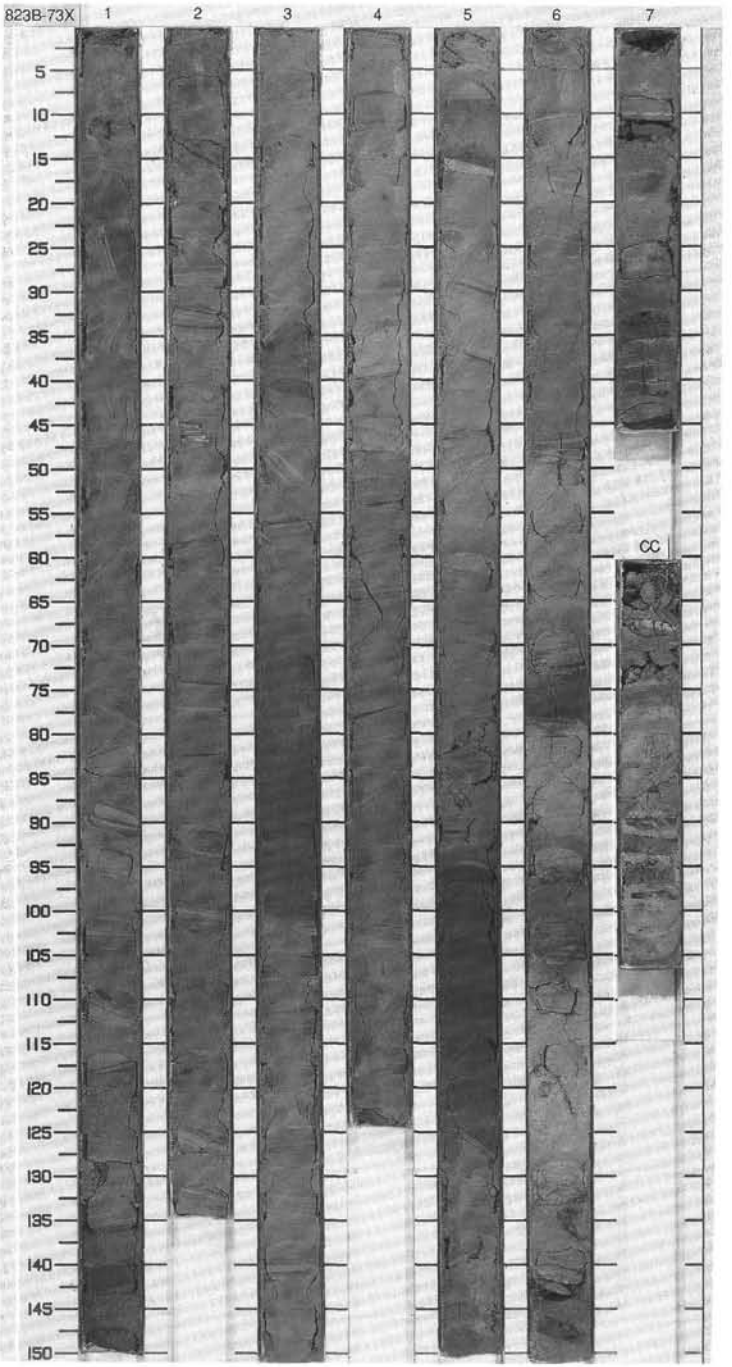
	1, 38 D	CF 2, 40 D
COMPOSITION:		
Bioclast	2	---
Calcite	2	---
Clay	20	---
Foraminifers	18	79
Glauconite	---	4
Nannofossils	55	---
Quartz	3	10
Rock fragment	---	7



SITE 823 HOLE B CORE 73X CORED INTERVAL 689.6-699.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	A/P	A/P			UNCERTAIN POLARITY	● 39.3% 2.09 ● 41.3% 2.12 ● 38.3% 2.13 ● 37.0% 2.19 ● 35.8% 2.15 ● 39.4% 2.14	● 58.4% ● 45.6% ● 58.3% ● 72.2%	1 2 3 4 5 6 7 CC	0.5 1.0				IW OG PAL	NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS Major Lithology: Dark greenish gray to gray (5GY 4/1 to 6/1) laminated NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS. Some laminae are contorted. Minor Lithology: Dark greenish gray to gray (5GY 4/1 to 6/1), bioturbated, NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS occur in Section 6 from 45 cm through to the bottom of the core.

N16 - N17
CN9



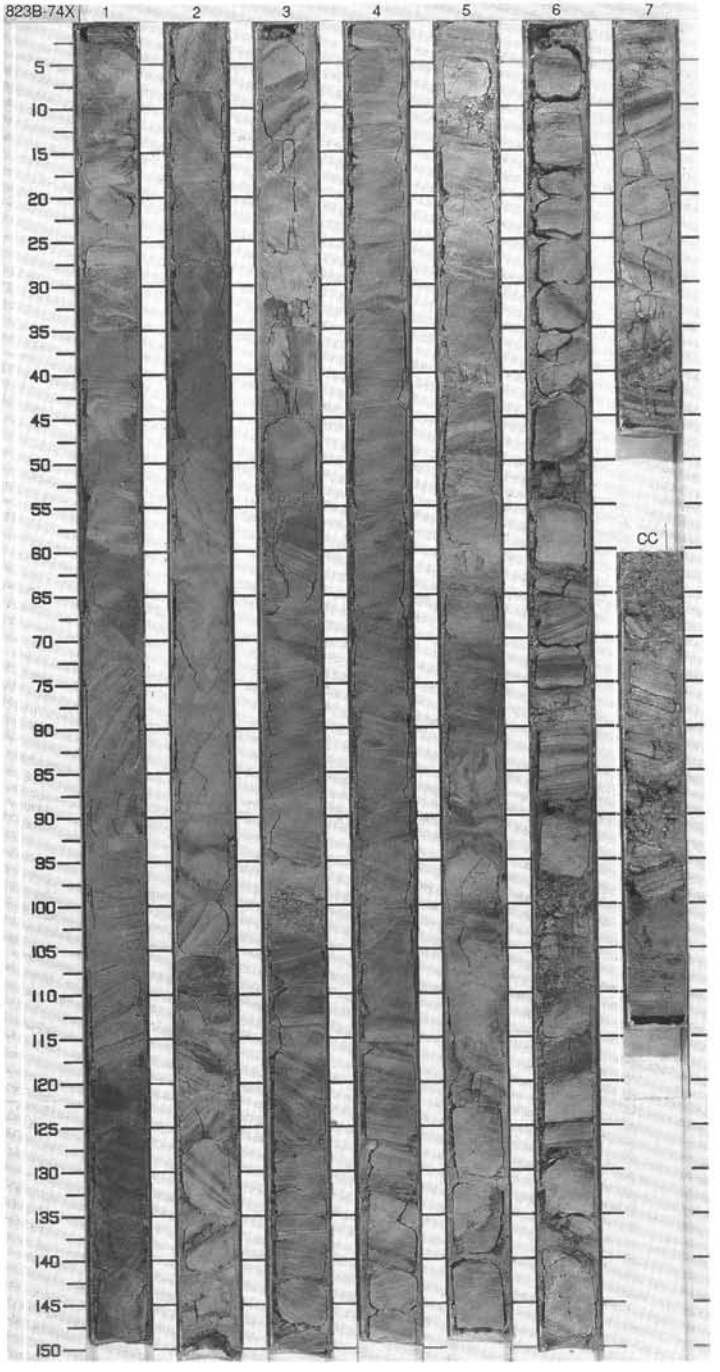
SITE 823 HOLE B CORE 74X CORED INTERVAL 699.3-708.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/G	N16 - N17	CN9	A/M	UNCERTAIN POLARITY	● 38.4% 2.10 ● 39.2% 2.12 ● 37.4% 2.12 ● 40.1% 2.14 ● 37.0% 2.12 ● 36.2% 2.15	● 68.6% ● 54.4% ● 79.3%	1 2 3 4 5 6 7 CC	0.5 1.0				PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CLAYEY CHALK to MIXED SEDIMENT; NANNOFOSSIL CHALK with FORAMINIFERS to FORAMINIFER PACKSTONE

Major Lithology: The core in Sections 1 to 4 is a slumped mass consisting of contorted and disturbed, laminated, NANNOFOSSIL CLAYEY CHALK to MIXED SEDIMENT, whereas the core in Sections 5 to CC consists of NANNOFOSSIL CHALK with FORAMINIFERS with several layers of FORAMINIFER PACKSTONE which forms the basal part of a fining-upward sequence that is interpreted as a turbidite layer.



SITE 823 HOLE B CORE 75X CORED INTERVAL 708.9-718.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/G N16 - N17	A/M CN9			UNCERTAIN POLARITY	● 42.0% 2.05 ● 42.0% 2.08 ● 40.7% 2.14 ● 43.8% 2.09 ● 41.0% 1.97 ● 48.1% 2.03	● 56.5% ● 64.1% ● 46.4%	1 2 3 4 5 6 7 CC	0.5 1.0				PAL

LITHOLOGIC DESCRIPTION

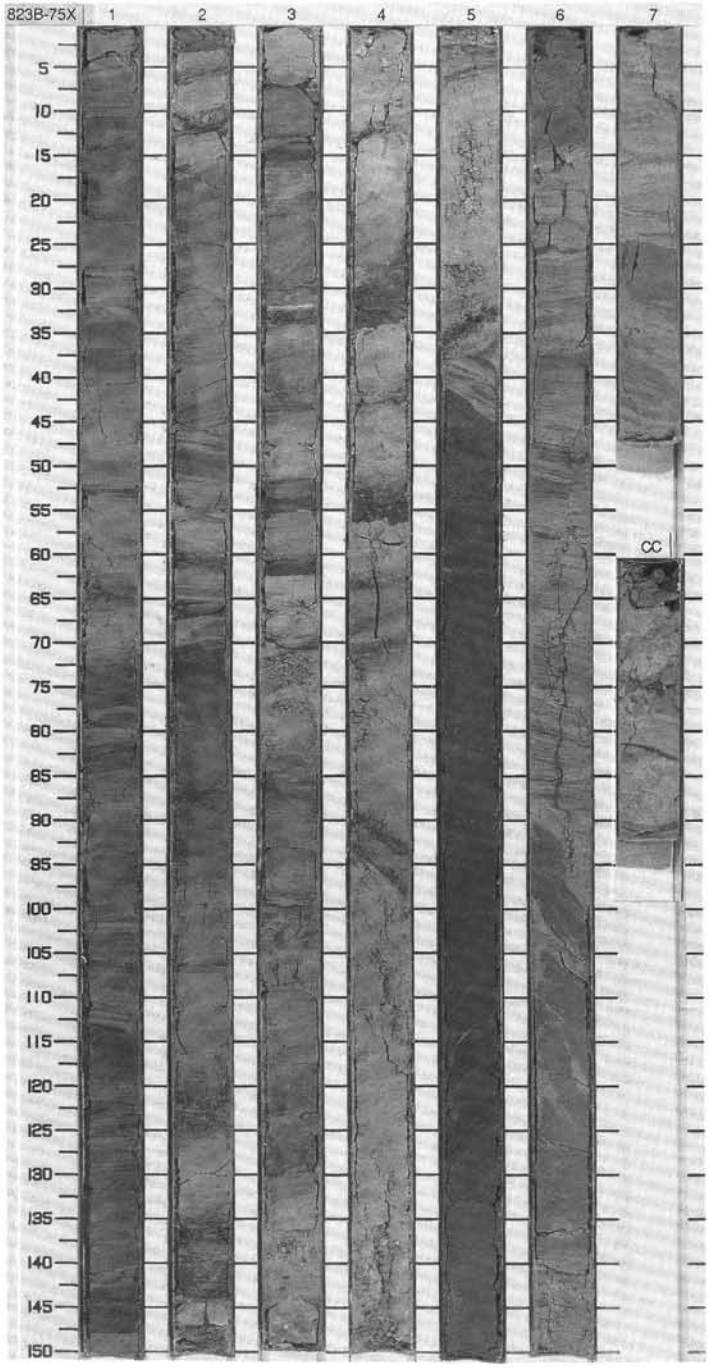
NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS

Major Lithology: Dark greenish gray to gray (5GY 4/1 to 6/1), laminated or bioturbated, NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS. Some laminae are contorted.

Minor Lithology: Dark gray, pyritic, BIOCLASTIC PACKSTONE forms the base of fining-upward units in Section 4.

SMEAR SLIDE SUMMARY (%):

	CC, 23 D
OMPOSITION:	
Bioclast	30
Glauconite	5
Nannofossils	35
Pyrite	20
Quartz	10



SITE 823 HOLE B CORE 76X CORED INTERVAL 718.6-728.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N16 - N17	CN9			UNCERTAIN POLARITY	40.1% 2.15	52.9%	1	0.5 1.0				
						38.7% 2.16		2					
						40.7% 2.11	31.0%	3					*
							34.2%	4					OG IW
						40.5% 2.20	30.3%	5					
								6					
					41.8% 2.12			7					
	A/P	A/M						CC					PAL

LITHOLOGIC DESCRIPTION

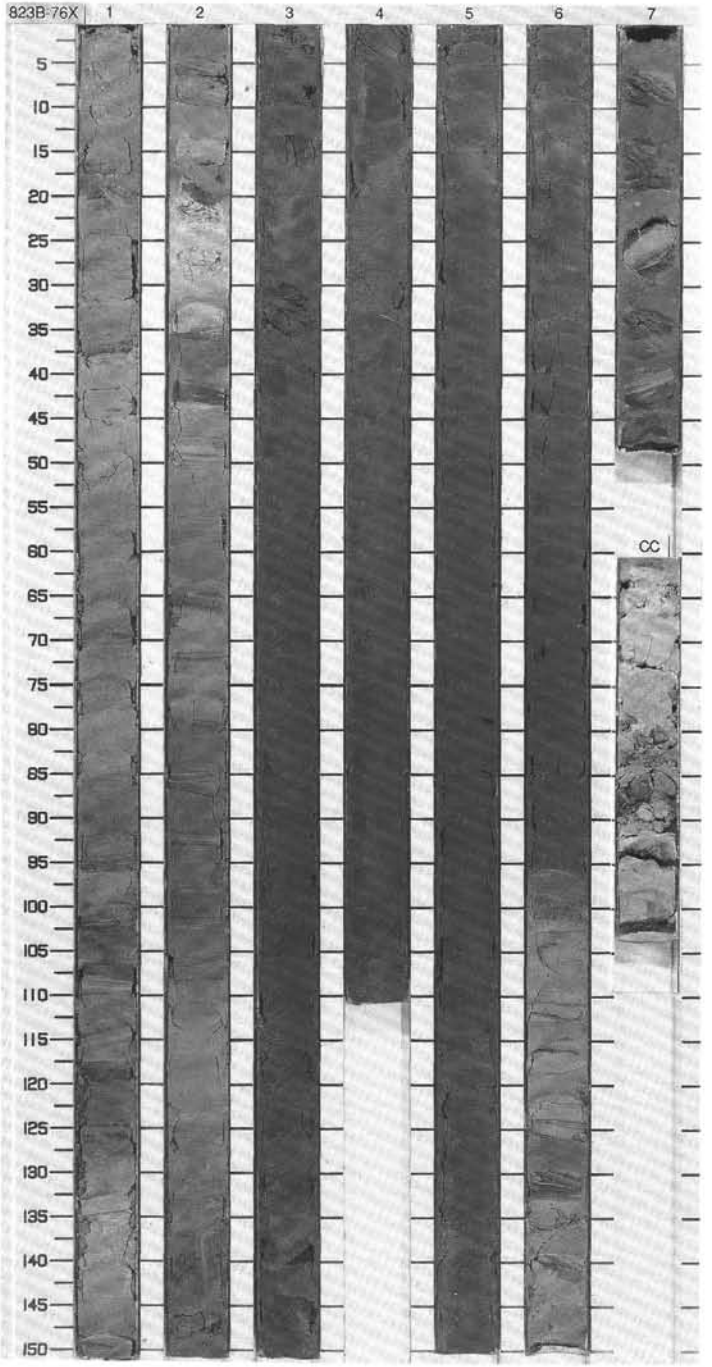
CLAYEY NANNOFOSSIL MIXED SEDIMENT to NANNOFOSSIL MUDSTONE with FORAMINIFERS to NANNOFOSSIL MIXED SEDIMENT with FORAMINIFERS

Major Lithology: Greenish gray (5GY 6/1), bioturbated or homogeneous, CLAYEY NANNOFOSSIL MIXED SEDIMENT to NANNOFOSSIL MUDSTONE with FORAMINIFERS and laminated NANNOFOSSIL MIXED SEDIMENT with FORAMINIFERS.

Minor Lithology: Gray, FORAMINIFER SKELETAL PACKSTONE with QUARTZ. Forms the base of fining upward sequences in Section 7.

SMEAR SLIDE SUMMARY (%):

	3, 43 D
COMPOSITION:	
Bioclast	25
Clay	15
Foraminifers	5
Nannofossils	40
Quartz	15



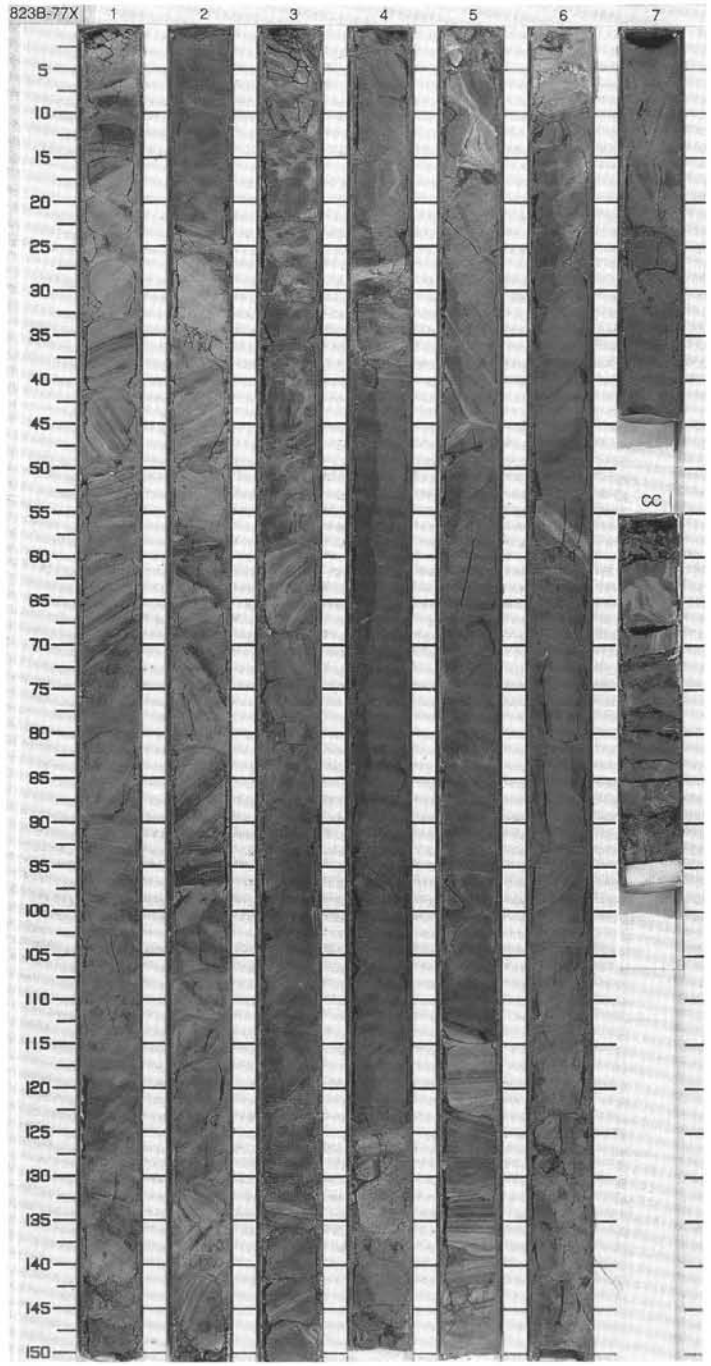
SITE 823 HOLE B CORE 77X CORED INTERVAL 728.2-737.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	A/G	N16 - N17			UNCERTAIN POLARITY	● 42.5% 2.13	● 45.1%	5				?		
						● 45.5% 2.08	● 46.2%	6						
						● 46.8% 2.09	● 62.9%	7						
	A/M	CN9						CC					PAL	

NANNOFOSSIL CHALK with CLAY to NANNOFOSSIL MIXED SEDIMENT

Major Lithology: Greenish gray (5GY 4/1 to 5GY 6/1), laminated and contorted, NANNOFOSSIL CHALK with CLAY to NANNOFOSSIL MIXED SEDIMENT. Some horizons are bioturbated.

Minor Lithology: LITHOCLASTIC RUDSTONE consisting of rounded clasts of NANNOFOSSIL CHALK in a matrix of NANNOFOSSIL CHALK to MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS. Probable debris flow.



SITE 823 HOLE B CORE 78X CORED INTERVAL 737.9-747.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N16 - N17 (A/G)	CN9 (A/M)			UNCERTAIN POLARITY	● 42.6% 2.10 ● 42.6% 2.07 ● 42.3% 2.10	● 78.1% ● 47.2% ● 49.6%	1 2 3 4 CC	0.5 1.0				PAL

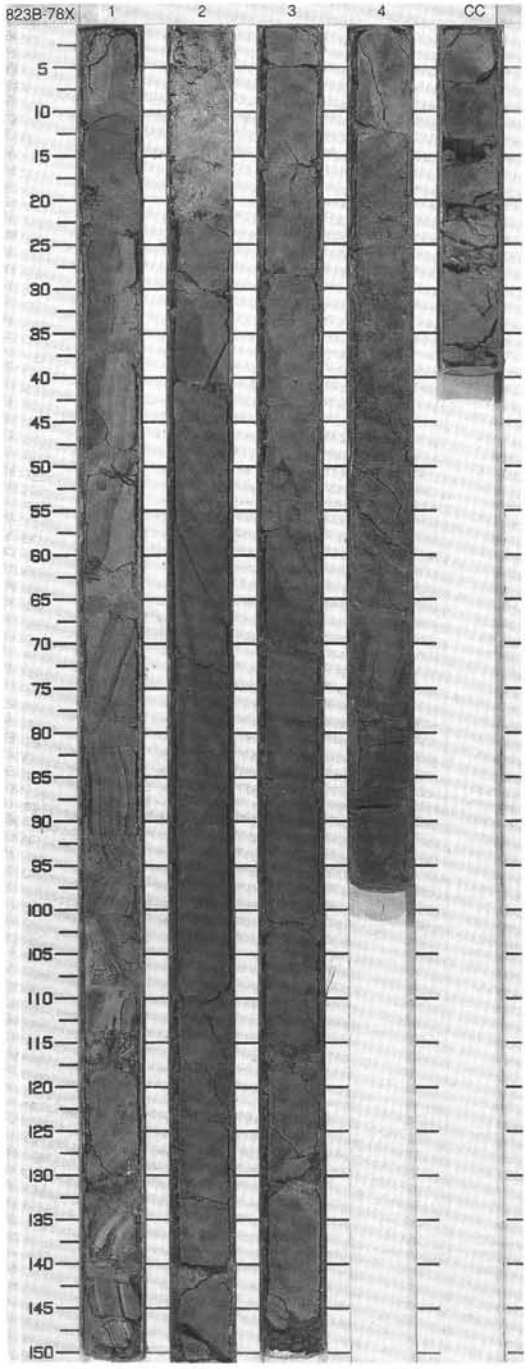
LITHOLOGIC DESCRIPTION

NANNOFOSSIL MIXED SEDIMENT to CHALK with FORAMINIFERS

Major Lithology: Dark gray to greenish gray (5Y 4/1 to 5GY 6/1), laminated or bioturbated, NANNOFOSSIL MIXED SEDIMENT to CHALK with FORAMINIFERS. The bedding of most of this core is steeply inclined or contorted. It appears to be part of a slump mass.

SMEAR SLIDE SUMMARY (%):

	2, 125 D
COMPOSITION:	
Bioclast	15
Carbonate particles	15
Clay	15
Foraminifers	10
Nannofossils	37
Quartz	8



SITE 823 HOLE B CORE 79X CORED INTERVAL 747.6-757.3 mbsf

TIME-ROCK UNIT: UPPER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER:
- FORAMINIFERS: A/G; N16 - N17
- NANNOFOSSILS: A/G; CN9
- RADIOLARIANS
- DIATOMS

PALEOMAGNETICS: UNCERTAIN POLARITY

PHYS. PROPERTIES: 40.5% 2.12; 43.2% 2.11; 36.1%; 47.6%; 43.7% 2.09; 45.2%; 41.9% 2.14; 42.8%; 39.7% 1.99; 47.8%

CHEMISTRY

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG, TW, PAL

LITHOLOGIC DESCRIPTION

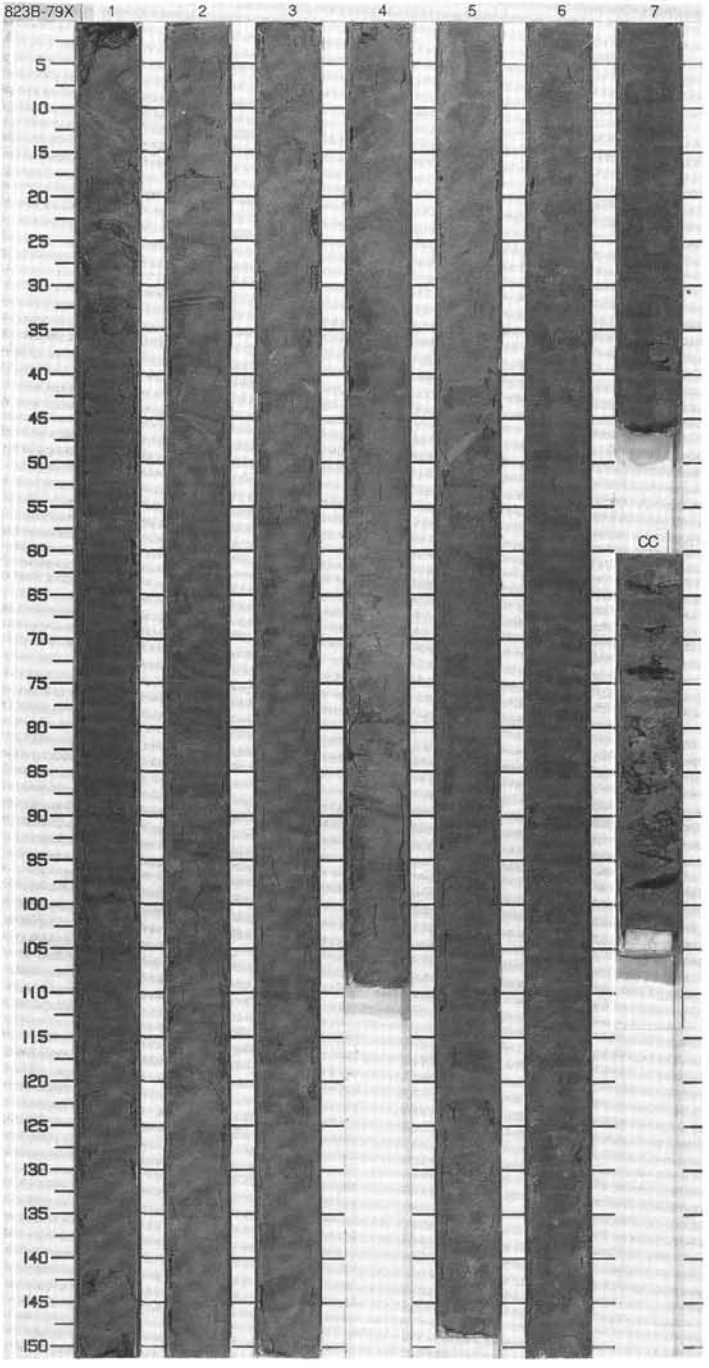
NANNOFOSSIL MIXED SEDIMENT to MUDSTONE with BIOCLASTS

Major Lithology: Dark greenish gray to greenish gray (5GY 4/1 to 5GY6/1), laminated or bioturbated, NANNOFOSSIL CHALK with FORAMINIFERS or BIOCLASTS. Some beds are contorted. Entire core is part of a slump.

Minor Lithology: Greenish gray (5GY 5/1), fine grained, FORAMINIFER BIOCLASTIC PACKSTONE.

SMEAR SLIDE SUMMARY (%):

	2, 93 D
COMPOSITION:	
Bioclast	25
Clay	20
Foraminifers	5
Nannofossils	40
Quartz	10



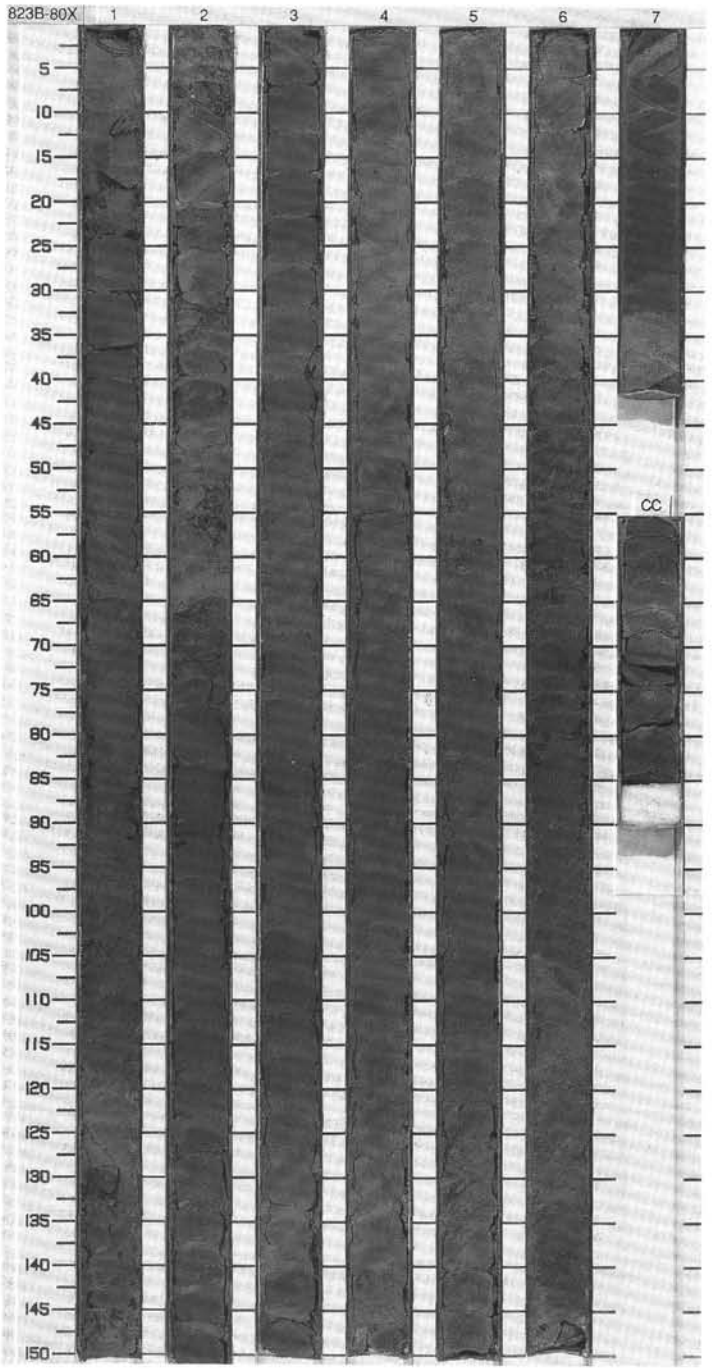
SITE 823 HOLE B CORE 80X CORED INTERVAL 757.3-767.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/M	N16 - N17			UNCERTAIN POLARTIY	● 39.2% 2.13	● 30.7%	1	0.5				
	A/G	CN9							1.0				
						● 37.8% 2.04		2					
					● 39.4% 2.16	● 39.0% 2.13	● 32.8%	3					
					● 42.3% 2.14		● 32.7%	4					
								5					
					● 44.0% 2.04			6					
								7					
								CC					PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL MUDSTONE with FORAMINIFERS and BIOCLASTS

Major Lithology: Dark greenish gray (5GY 4/1), laminated or bioturbated, NANNOFOSSIL MUDSTONE with FORAMINIFERS and BIOCLASTS. Some beds are contorted. The entire core is part of a slump.



SITE 823 HOLE B CORE 81X CORED INTERVAL 767.0-776.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N16 - N17	CN9			UNCERTAIN POLARITY	● 39.0% 2.17	● 34.3	1	0.5				*
									1.0				
						● 39.6% 2.19	● 35.1%	2					
								3					
	A/G	A/G			● 38.6% 2.13		● 40.7%	4					
								5					
								CC					PBS

LITHOLOGIC DESCRIPTION

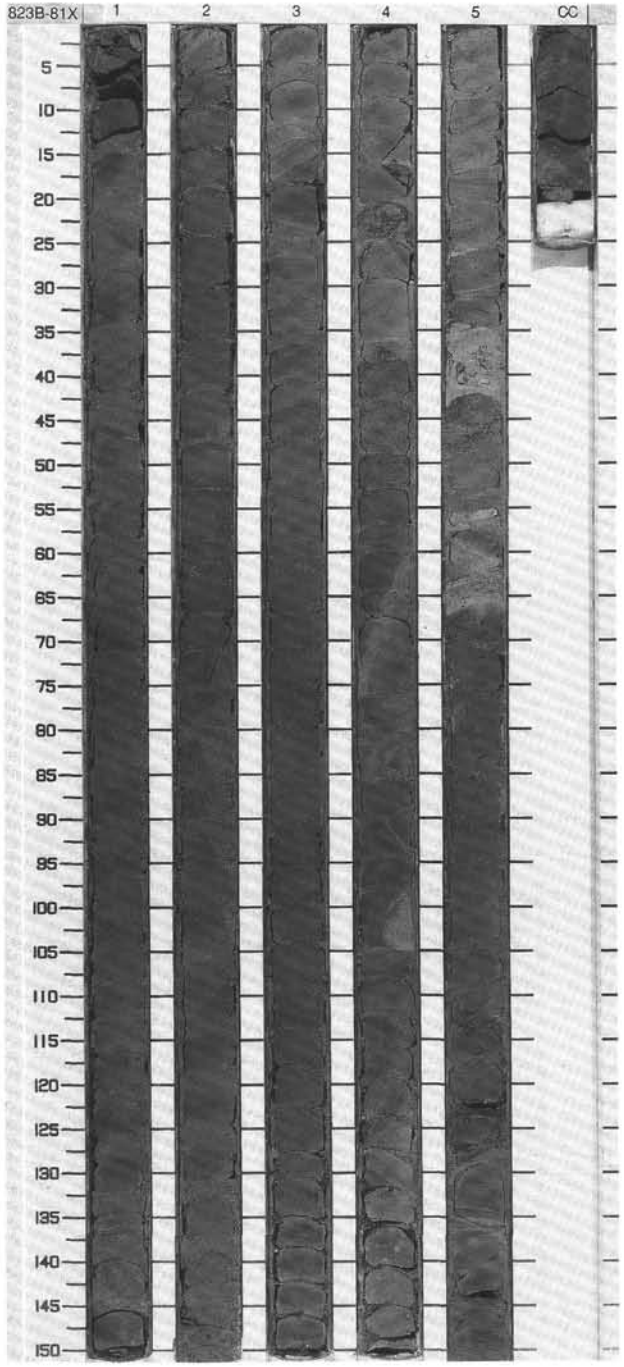
NANNOFOSSIL MUDSTONE with FORAMINIFERS and BIOCLASTS

Major Lithology: Dark greenish gray to greenish gray (5GY 4/1 to 5GY 6/1), laminated or bioturbated, NANNOFOSSIL MUDSTONE with FORAMINIFERS and BIOCLASTS. Some beds are contorted and others overturned. The entire core is part of a slump.

Minor Lithology: Greenish gray (5GY 7/1), fine grained, FORAMINIFER BIOCLASTIC PACKSTONE.

SMEAR SLIDE SUMMARY (%):

	1, 55 D
Bioclast	15
Clay	20
Foraminifers	3
Glauconite	2
Nannofossils	50
Quartz	10



SITE 823 HOLE B CORE 82X CORED INTERVAL 776.7-786.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/G	N16 - N17	CN9	A/M	UNCERTAIN POLARITY	● 32.5% 2.48 ● 30.6% 2.33 ● 37.8% 2.02	● 55.6% ● 62.1% ● 61.8% ● 51.9%	1 2 3 4 5 CC	0.5 1.0				IW PAL

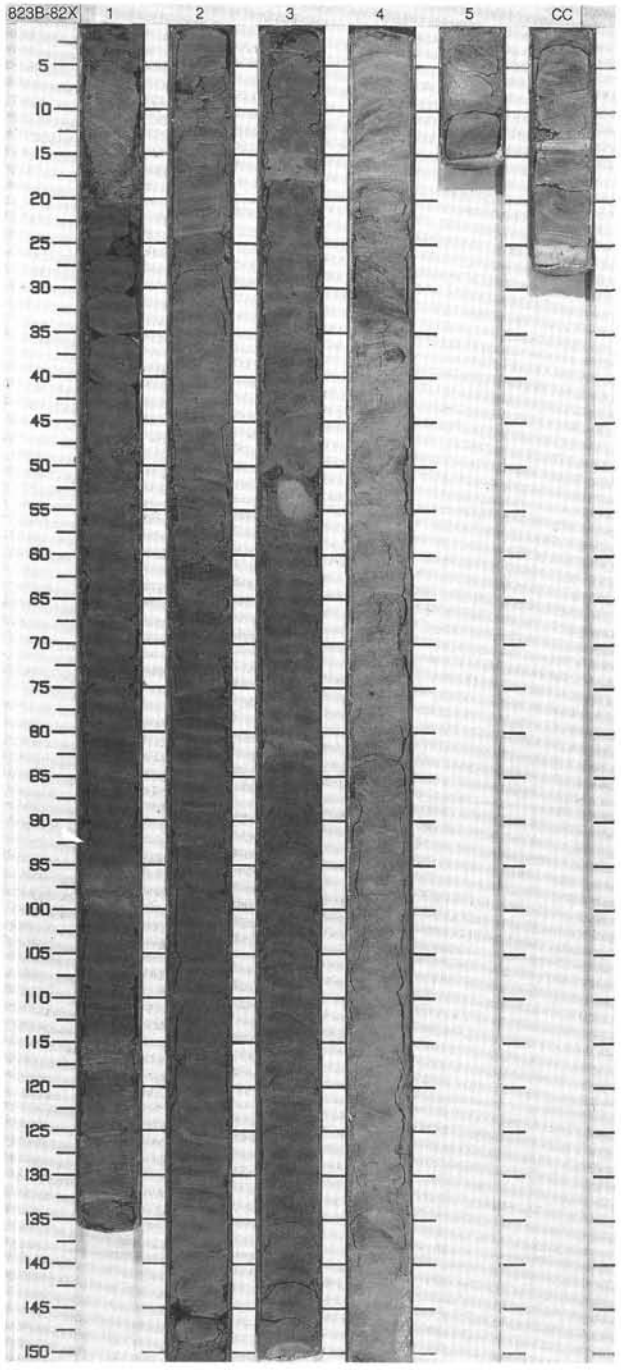
LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS

Major Lithology: Dark gray to gray (5Y 4/1 to 5Y 6/1), laminated or bioturbated. NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS.

SMEAR SLIDE SUMMARY (%):

	2, 47 D	4, 96 D
COMPOSITION:		
Bioclast	10	10
Clay	35	30
Foraminifers	2	3
Nannofossils	50	55
Quartz	3	2

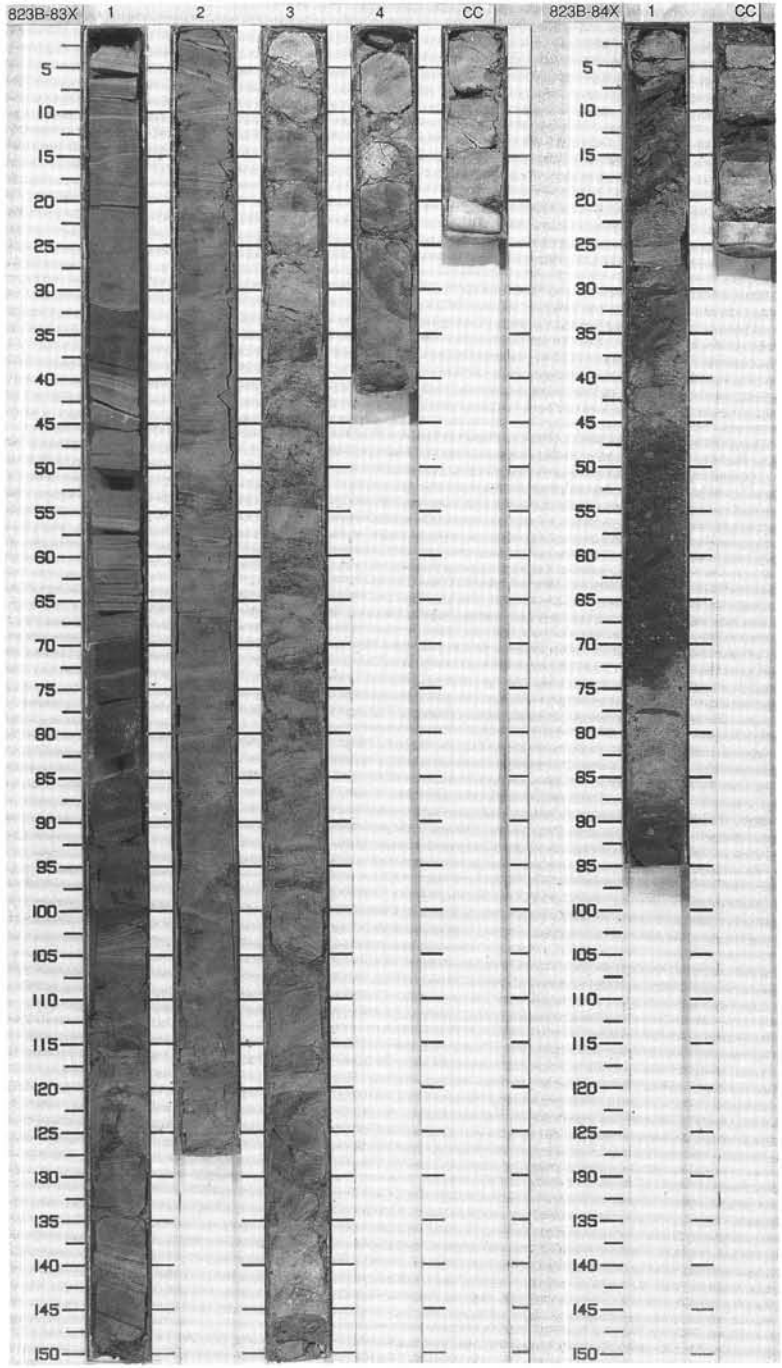


SITE 823 HOLE B CORE 83X CORED INTERVAL 786.4-795.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	A/P	N16 - N17	A/P	CN9	UNCERTAIN POLARITY	● 41.5% 2.15 ● 36.2% 2.17 ● 43.0% 2.12	● 38.7% ● 61.1% ● 58.0%	1 2 3 4 CC	0.5 1.0				OG	NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS Major Lithology: Dark gray to greenish gray (5Y 4/1 to 5GY 6/1), laminated or bioturbated, NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS. SMEAR SLIDE SUMMARY (%): 1, 39 D — 3, 95 D COMPOSITION: Bioclast 15 15 Calcite 5 2 Clay 30 5 Discoaster -- 5 Foraminifers 10 5 Nannofossils 35 63 Quartz 5 5

SITE 823 HOLE B CORE 84X CORED INTERVAL 795.7-805.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	A/M N16-N17	A/P CN9						1 CC	0.5 1.0					NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS Major Lithology: Dark gray to greenish gray (5Y 4/1 to 5GY 6/1), laminated or bioturbated, NANNOFOSSIL CHALK to MIXED SEDIMENT with BIOCLASTS.



SITE 823 HOLE C CORE 1R CORED INTERVAL 784.0-793.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/M N16 - N17	A/P CN9				● 38.6% 2.27 ● 38.1% 2.15 ● 37.2% 2.24 ● 36.2% 2.12 ● 37.2% 2.0	● 71.1% ● 70.6% ● 53.4% ● 60.9%	1 2 3 4 5 CC	0.5 1.0				* IW * PAL

LITHOLOGIC DESCRIPTION

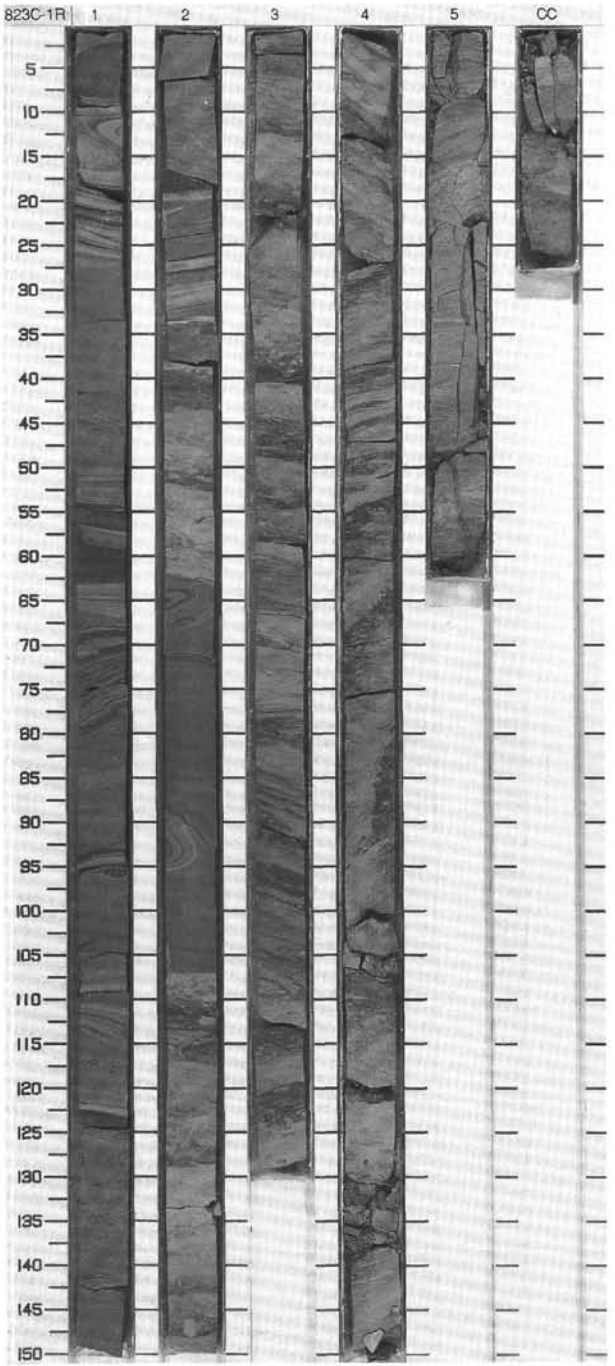
NANNOFOSSIL CHALK with MICRITE and CLAY

Major Lithology: Interbedded light and dark greenish gray (5GY 4/1 and 5GY 7/1) NANNOFOSSIL CHALK with MICRITE and CLAY; thin bedded to laminated, commonly well bioturbated. Intervals of contorted and folded beds and laminae indicate soft sediment deformation.

Minor Lithology: Gray (5Y 5/1) to dark greenish gray (5GY 4/1), graded (very fine to medium sand-sized) BIOCLASTIC PACKSTONE beds. The base of packstone beds are sharp and the tops commonly appear transitional with overlying ooze. However, reverse grading in Section 4 may suggest that the sedimentary section is overturned. Dark greenish gray (5GY 4/1) CLAYEY NANNOFOSSIL MIXED SEDIMENT occurs in section 3.

SMEAR SLIDE SUMMARY (%):

	1, 5 D	4, 129 D
COMPOSITION:		
Bioclast	5	5
Calcite	12	3
Clay	25	10
Foraminifers	15	5
Micrite	10	20
Nannofossils	25	56
Quartz	8	1



SITE 823 HOLE C CORE 2R CORED INTERVAL 793.6-802.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/M	N16 - N17				● 32.4% 2.26	● 65.8%	1	0.5				*
	A/P	CN9							1.0				
						● 26.0% 2.04		2					
						● 39.4% 2.04	● 91.9%	3					* *
								4					*
								CC					*

LITHOLOGIC DESCRIPTION

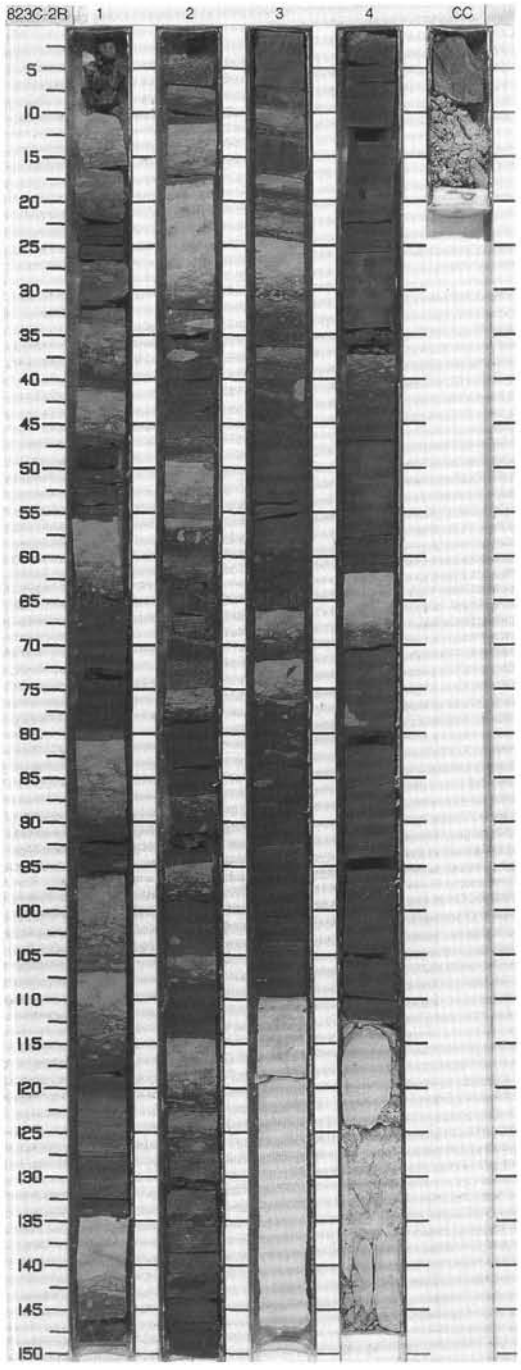
NANNOFOSSIL CHALK with CLAY and CALCAREOUS GRAINSTONE/PACKSTONE to WACKESTONE with FORAMINIFERS, CARBONATE PARTICLES, and SILICICLASTIC GRAINS

Major Lithology: Greenish gray (5GY 4/1), graded, partially lithified, CALCAREOUS GRAINSTONE/PACKSTONE to WACKESTONE with FORAMINIFERS, CARBONATE PARTICLES, SILICICLASTIC GRAINS, and trace GLAUCONITE. This lithology is rhythmically interbedded with highly bioturbated, light greenish gray (5GY 6/1 to 5GY 7/1) NANNOFOSSIL CHALK with CLAY. The basal contact of PACKSTONE and CHALK is commonly sharp and planar, with local scour features. The maximum thickness of the graded beds increases down section from ca. 4 cm in Section 1, 10 cm in Section 2, 15 cm in Section 3, and 40 cm in Section 4 where they dominate the interval. In Section 4 the grading is uneven.

Minor lithology: Light tan to light buff brown (5Y 8/1), NANNOFOSSIL CHALK with DOLOMITE, CLAY and MICRITE occurs at the base of Section 4 and in the core catcher. Traces of GLAUCONITE occur in the turbidites of Section 4.

SMEAR SLIDE SUMMARY (%):

	1, 79 M	3, 143 D	3, 147 D	4, 58 D	4, 142 D	CC, 16 D
COMPOSITION:						
Accessory minerals	---	---	---	Tr	---	---
Calcite	50	10	10	---	15	10
Carbonate particles	---	---	---	---	7	15
Clay	---	---	5	35	15	5
Dolomite	1	---	---	---	15	35
Feldspar	2	5	5	---	1	---
Foraminifers	15	---	45	20	---	---
Glauconite	---	---	---	Tr	---	---
Micrite	9	20	10	5	15	15
Nannofossils	15	60	10	20	30	20
Pyrite	Tr	---	Tr	1	Tr	Tr
Quartz	8	5	15	19	---	---
Spicules	---	---	---	---	2	---



SITE 823 HOLE C CORE 3R CORED INTERVAL 802.9-812.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	A/M N16 - N17	C/P CN9				● 31.7% 2.26 ● 33.5% 2.19 ● 35.4% 2.13 ● 33.7% 2.12	● 96.6% ● 87.0%	1 2 3 4 CC	0.5 1.0			F F F	PAL

LITHOLOGIC DESCRIPTION

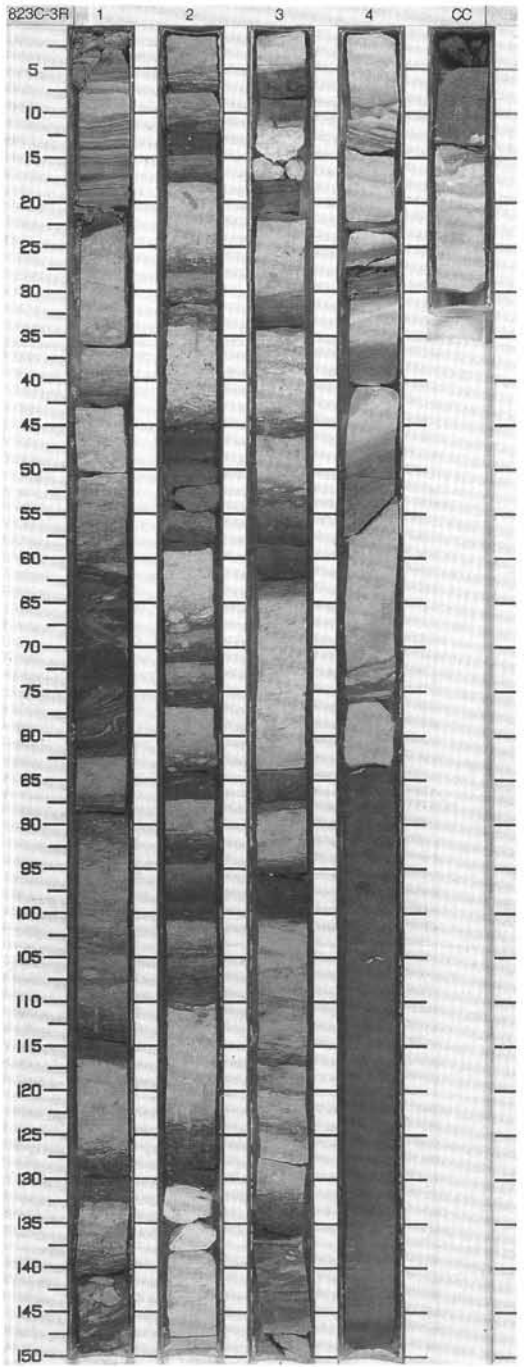
NANNOFOSSIL CHALK; CALCAREOUS GRAINSTONE/PACKSTONE to WACKESTONE with FORAMINIFERS, CARBONATE PARTICLES and SILICICLASTIC GRAINS

Major Lithology: In Sections 2 and 3 and parts of 1 and 4, highly bioturbated, light greenish gray (5GY 6/1 to 5GY 7/1) NANNOFOSSIL CHALK with CLAY (locally DOLOMITIC: Section 4, 75-85 cm). This lithology appears rhythmically interbedded with greenish gray (5GY 4/1), graded, CALCAREOUS GRAINSTONE/PACKSTONE to WACKESTONE with FORAMINIFERS, CARBONATE PARTICLES and SILICICLASTIC GRAINS. Combined, these lithologies occur throughout parts of Sections 1 and 4, and all of 2, 3 and CC.

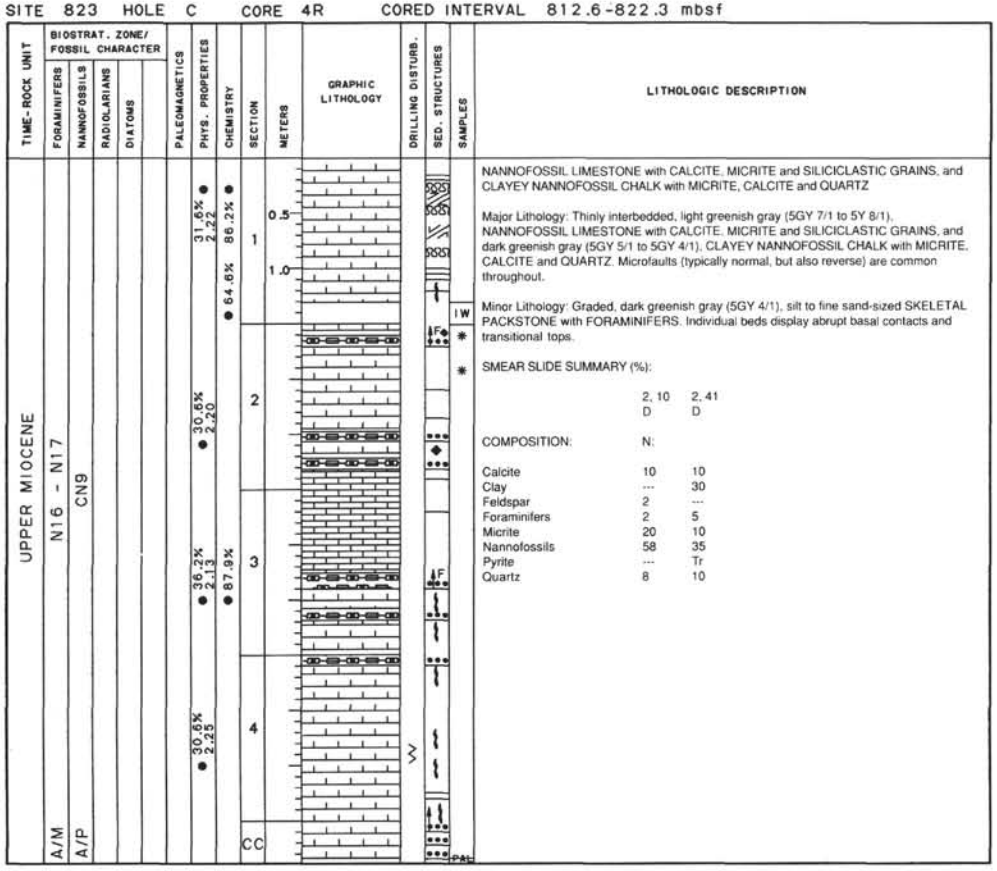
Minor Lithology: Laminated to thinly interbedded dark (5GY 4/1) and light (5GY 7/1) greenish gray, microfaulted, NANNOFOSSIL LIMESTONE. Darker units are more clay rich and show wispy cross laminae. Contorted, dark greenish gray, LITHOCLASTIC FLOATSTONE occurs, with clasts, 1-6 cm in length, are lenticular and consist of CLAYEY NANNOFOSSIL CHALK and SKELETAL PACKSTONE.

SMEAR SLIDE SUMMARY (%):

	4, 80 D
COMPOSITION:	
Calcite	10
Dolomite	25
Foraminifers	30
Micrite	15
Nannofossils	10
Quartz	10



SITE 823 HOLE C CORE 4R CORED INTERVAL 812.6-822.3 mbsf



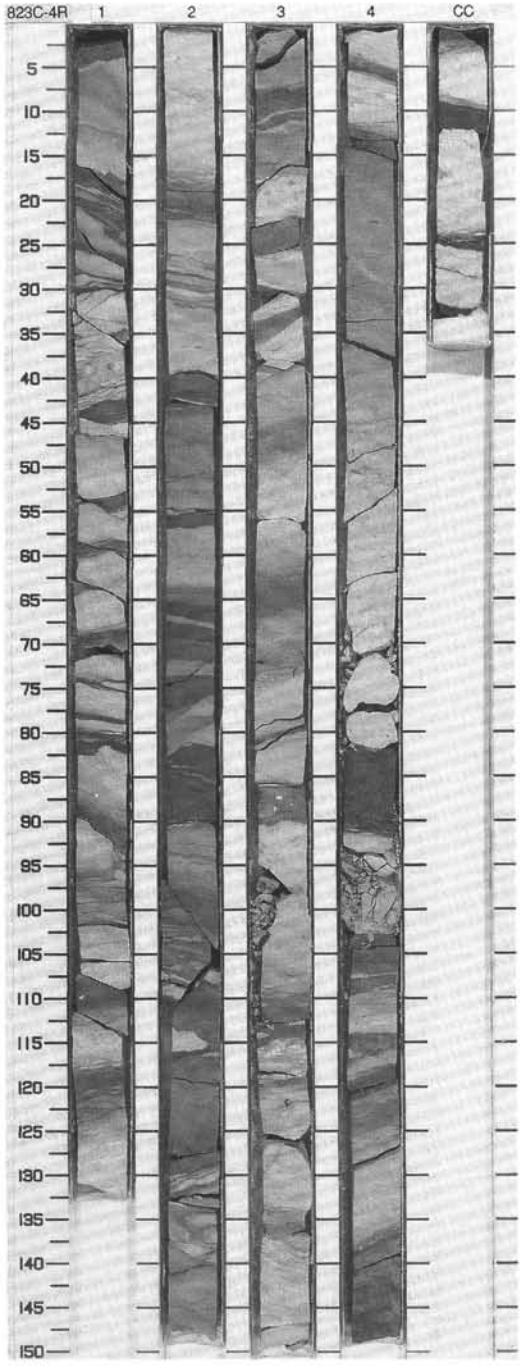
NANNOFOSSIL LIMESTONE with CALCITE, MICRITE and SILICICLASTIC GRAINS, and CLAYEY NANNOFOSSIL CHALK with MICRITE, CALCITE and QUARTZ

Major Lithology: Thinly interbedded, light greenish gray (5GY 7/1 to 5Y 8/1), NANNOFOSSIL LIMESTONE with CALCITE, MICRITE and SILICICLASTIC GRAINS, and dark greenish gray (5GY 5/1 to 5GY 4/1), CLAYEY NANNOFOSSIL CHALK with MICRITE, CALCITE and QUARTZ. Microfaults (typically normal, but also reverse) are common throughout.

Minor Lithology: Graded, dark greenish gray (5GY 4/1), silt to fine sand-sized SKELETAL PACKSTONE with FORAMINIFERS. Individual beds display abrupt basal contacts and transitional tops.

SMEAR SLIDE SUMMARY (%):

	2, 10 D	2, 41 D
COMPOSITION:	N:	
Calcite	10	10
Clay	---	30
Feldspar	2	---
Foraminifers	2	5
Micrite	20	10
Nannofossils	58	35
Pyrite	---	Tr
Quartz	8	10



SITE 823 HOLE C CORE 5R CORED INTERVAL 822.3-832.0 mbsf

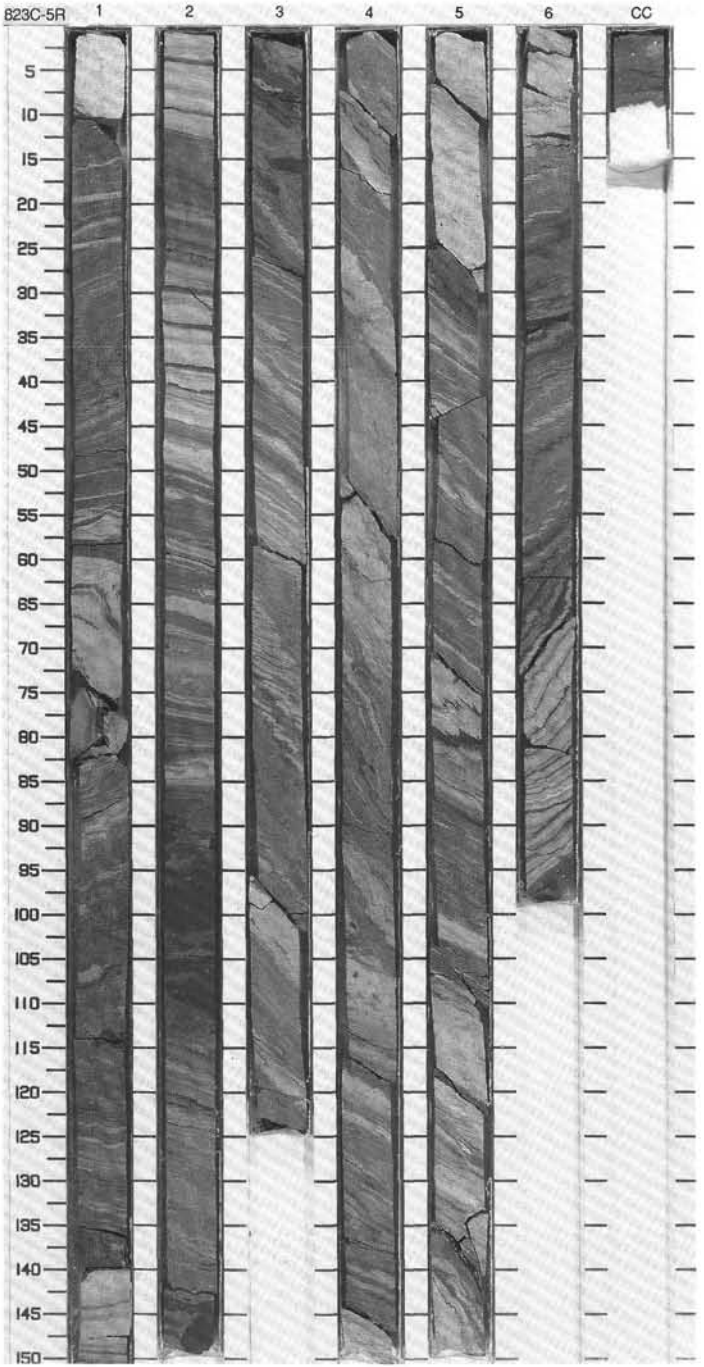
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N16 - N17	CN9				30.3% 2.21 31.8% 2.20 28.3% 2.27 32.5% 2.23 32.8% 2.20 30.9% 2.22	74.1% 78.9% 56.7%	1 2 3 4 5 6 CC	0.5 1.0				OG PAL
	A/M												
	A/P												

LITHOLOGIC DESCRIPTION

NANNOFOSSIL LIMESTONE with CALCITE, MICRITE and SILICICLASTIC GRAINS; and CLAYEY NANNOFOSSIL CHALK with MICRITE, CALCITE and QUARTZ

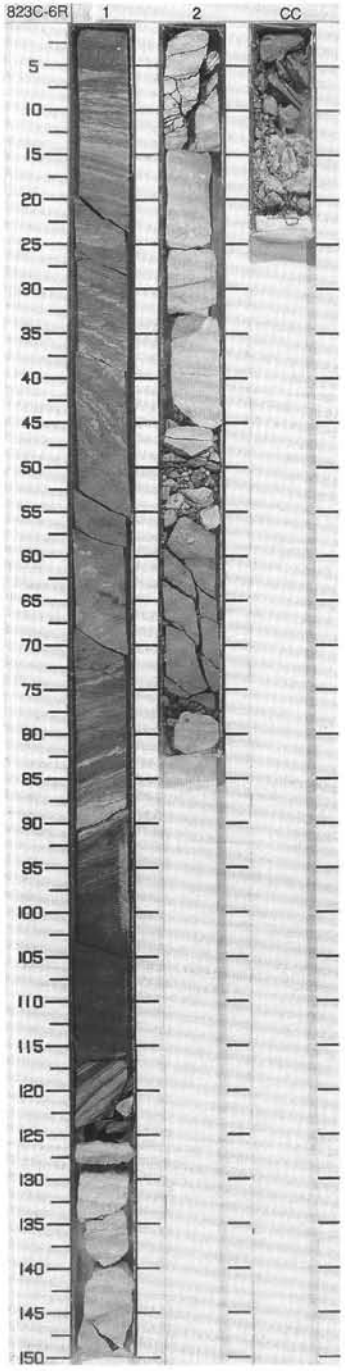
Major Lithology: Thinly interbedded, light greenish gray (5GY 7/1 to 5Y 8/1), NANNOFOSSIL LIMESTONE with CALCITE, MICRITE and SILICICLASTIC GRAINS, and dark greenish gray (5GY 5/1 to 5GY 4/1), CLAYEY NANNOFOSSIL CHALK with MICRITE, CALCITE and QUARTZ. Microfaults, along with steeply inclined and contorted bedding along with folding, are very common throughout. Bioturbation is relatively minor. Variously sized, isolated NANNOFOSSIL CHALK clasts occur in Section 1 at 115 cm; Section 2 from 90 to 110 cm and at 145 cm; and Section 3 from 0 to 20 cm.

Minor Lithology: Graded, dark greenish gray (5GY 4/1), SKELETAL PACKSTONE with FORAMINIFERS displaying abrupt basal contacts and transitional tops occurs in Sections 2 (0-45 cm) and 6 (35-40 cm and 90-100 cm).

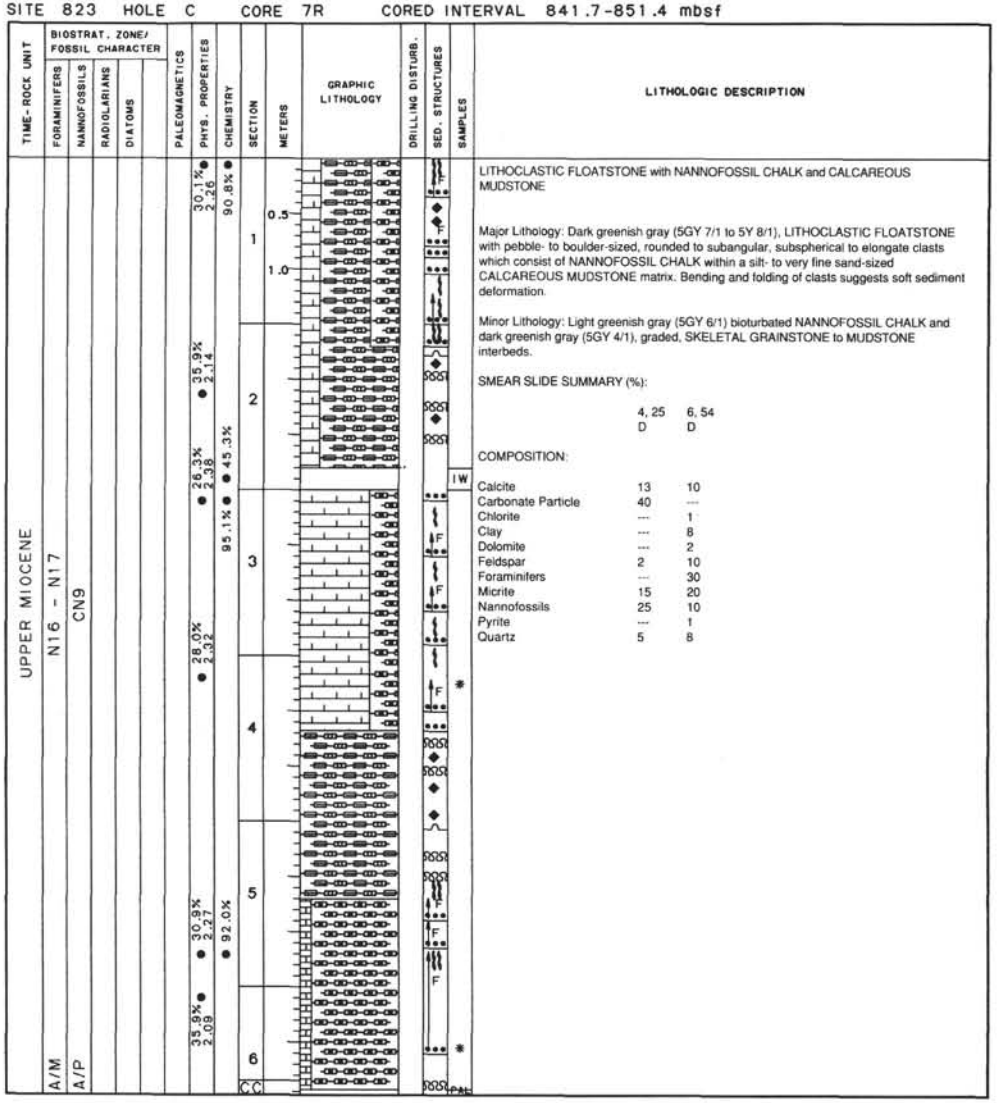


SITE 823 HOLE C CORE 6R CORED INTERVAL 832.0-841.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	? R/P	CN9 A/P			64.4%	29.5% 2.30	78.5%	1	0.5 1.0					NANNOFOSSIL LIMESTONE with CALCITE, MICRITE and SILICICLASTIC GRAINS, and CLAYEY NANNOFOSSIL CHALK with MICRITE, CALCITE and QUARTZ Major Lithology: Light greenish gray (5GY 7/1 to 5Y 8/1) NANNOFOSSIL LIMESTONE with CALCITE, MICRITE and SILICICLASTIC GRAINS, thinly interbedded with dark greenish gray (5GY 5/1 to 4/1), CLAYEY NANNOFOSSIL CHALK with MICRITE, CALCITE and QUARTZ; possibly stylolitized. Microfaults and steeply inclined and contorted bedding are common. Slickensides along a small fault occur at 125 cm in Section 1. Minor Lithology: LITHOCLASTIC FLOATSTONE with pebble-sized clasts of NANNOFOSSIL CHALK with NANNOFOSSIL LIMESTONE. Also, 0-5 cm Section 1: dark greenish gray (5GY 4/1), silt- to clay-sized, graded. CALCAREOUS PACKSTONE to MUDSTONE with FORAMINIFERS.
						30.2% 2.25	91.3%	2						
								CC					PAL	



SITE 823 HOLE C CORE 7R CORED INTERVAL 841.7-851.4 mbsf



LITHOLOGIC DESCRIPTION

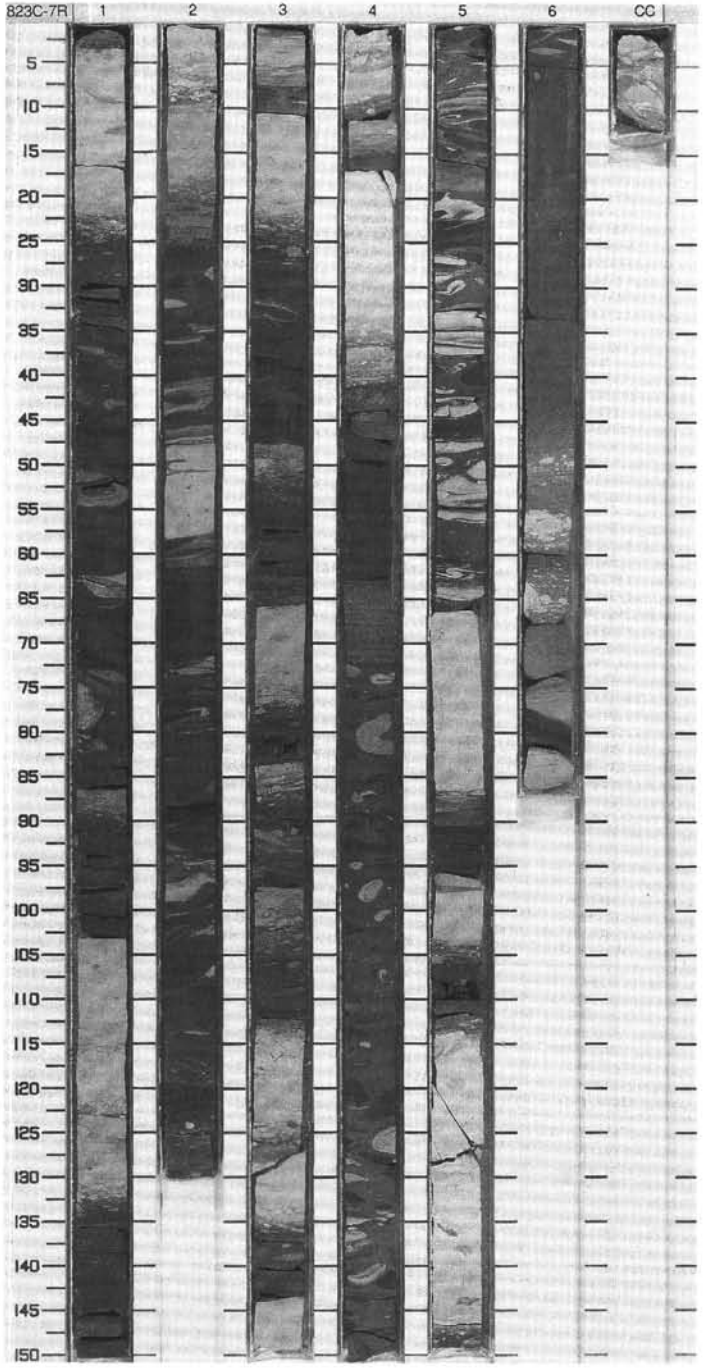
LITHOCLASTIC FLOATSTONE with NANNOFOSSIL CHALK and CALCAREOUS MUDSTONE

Major Lithology: Dark greenish gray (5GY 7/1 to 5Y 8/1), LITHOCLASTIC FLOATSTONE with pebble- to boulder-sized, rounded to subangular, subspherical to elongate clasts which consist of NANNOFOSSIL CHALK within a silt- to very fine sand-sized CALCAREOUS MUDSTONE matrix. Bending and folding of clasts suggests soft sediment deformation.

Minor Lithology: Light greenish gray (5GY 6/1) bioturbated NANNOFOSSIL CHALK and dark greenish gray (5GY 4/1), graded, SKELETAL GRAINSTONE to MUDSTONE interbeds.

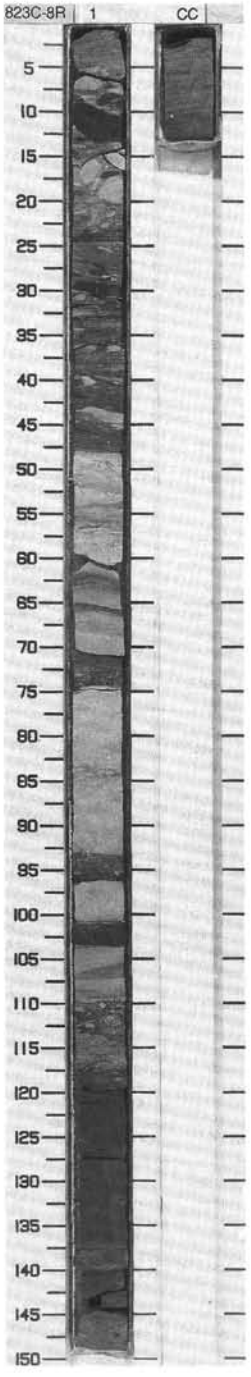
SMEAR SLIDE SUMMARY (%):

	4, 25 D	6, 54 D
COMPOSITION:		
Calcite	13	10
Carbonate Particle	40	---
Chlorite	---	1
Clay	---	8
Dolomite	---	2
Feldspar	2	10
Foraminifers	---	30
Micrite	15	20
Nannofossils	25	10
Pyrite	---	1
Quartz	5	8



SITE 823 HOLE C CORE 8R CORED INTERVAL 851.4-861.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	A/M	C/M				● 37.7% 2.68	● 91.0%	1	0.5 1.0				PAL	NANNOFOSSIL CHALK; and GRAINSTONE to MUDSTONE Major Lithology: Lower two-thirds of core consists of highly bioturbated, light greenish gray (5GY 6/1), NANNOFOSSIL CHALK with dark greenish gray (5GY 4/1), graded, GRAINSTONE to MUDSTONE interbeds. The resedimented deposits display planar, massive and cross-bedded fabrics. Minor Lithology: Dark greenish gray (5GY 4/1), LITHOCLASTIC FLOATSTONE with subspherical to elongate clasts of NANNOFOSSIL CHALK floating within a greenish gray NANNOFOSSIL CHALK with CLAY. Bending and folding of clasts suggests soft sediment deformation. This unit occurs in the top 48 cm of the core. Also, interlaminated to very thinly interbedded, dark greenish gray (5GY 4/1) and light greenish gray (5GY 7/1), NANNOFOSSIL CHALK and LIMESTONE.
	N16 - N17	CN9						CC						



SITE 823 HOLE C CORE 9R CORED INTERVAL 861.1-870.8 mbsf

TIME-ROCK UNIT: UPPER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS A/G N16 - N17; NANNOFOSSILS A/G CN9; RADIOLARIANS; DIATOMS

PALEOMAGNETICS

PHYS. PROPERTIES: ● 42.8% 2.09; ● 37.9% 2.10; ● 38.3% 2.23; ● 33.7% 2.25; ● 42.6% 2.03

CHEMISTRY: ● 25.8%; ● 66.0%; ● 27.6%

SECTION: 1, 2, 3, 4, 5, 6, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES

LITHOLOGIC DESCRIPTION

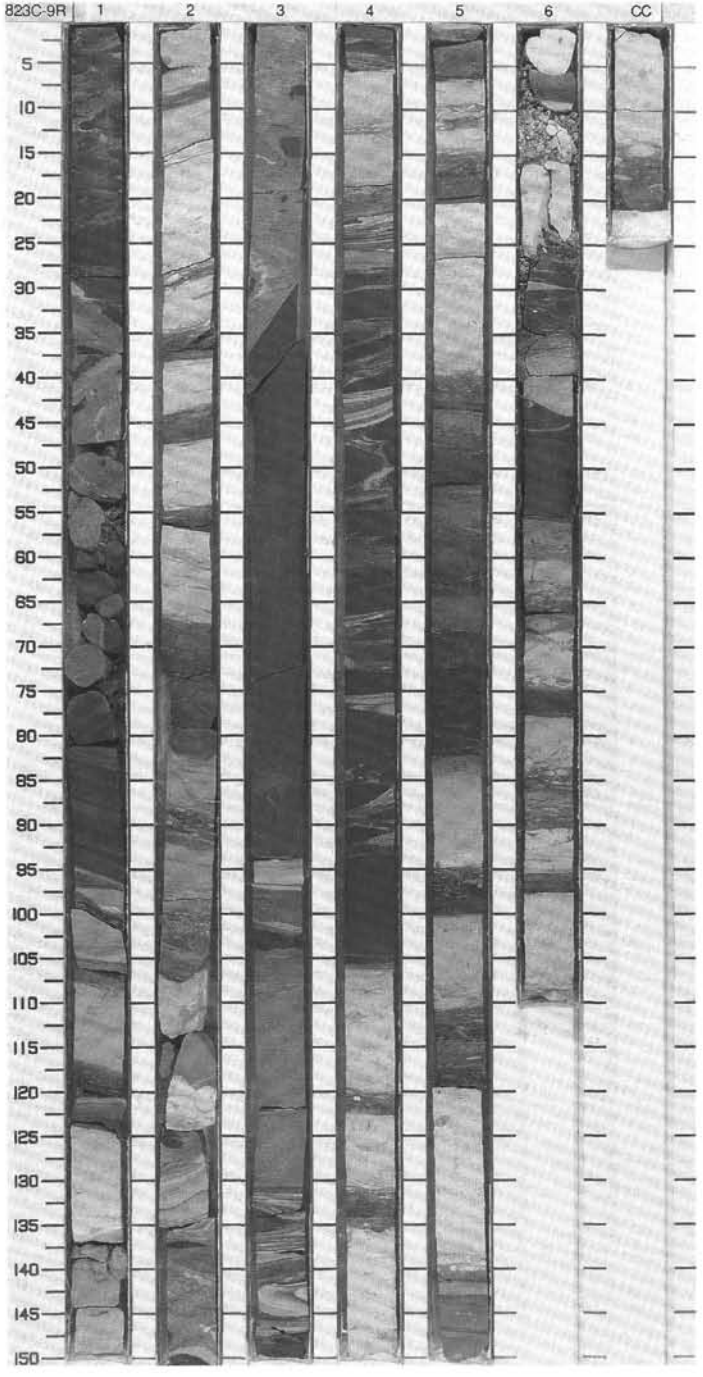
NANNOFOSSIL CHALK with FORAMINIFERS; SKELETAL PACKSTONES; and LITHOCLASTIC FLOATSTONE to RUDSTONE

Major Lithology: Highly bioturbated, light to dark greenish gray (5GY 4/1 to 5GY 7/1), NANNOFOSSIL CHALK with FORAMINIFERS, interbedded with numerous intervals of dark greenish gray (5GY 4/1), SKELETAL PACKSTONE commonly grading upward to CALCAREOUS MUDSTONE. Packstones are fine to medium sand-sized. Also occurring are 10 to 50 cm thick intervals of dark to light greenish gray (5GY 4/1 to 5GY 6/1), FLOATSTONE to RUDSTONE with subspherical white to dark green NANNOFOSSIL CHALK clasts floating in a contorted, greenish gray, NANNOFOSSIL CLAYEY CHALK matrix. Grades down into LITHOCLASTIC PACKSTONE in the upper 37-60 cm of the core.

Minor Lithology: Homogenous, dark olive green (5Y 3/2), NANNOFOSSIL CHALK with QUARTZ and light purplish bioturbated NANNOFOSSIL LIMESTONE with numerous microfaults. SKELETAL PACKSTONE fills burrows and is faintly yellow in color. *Slickensides occur in 1, 60-98 cm.*

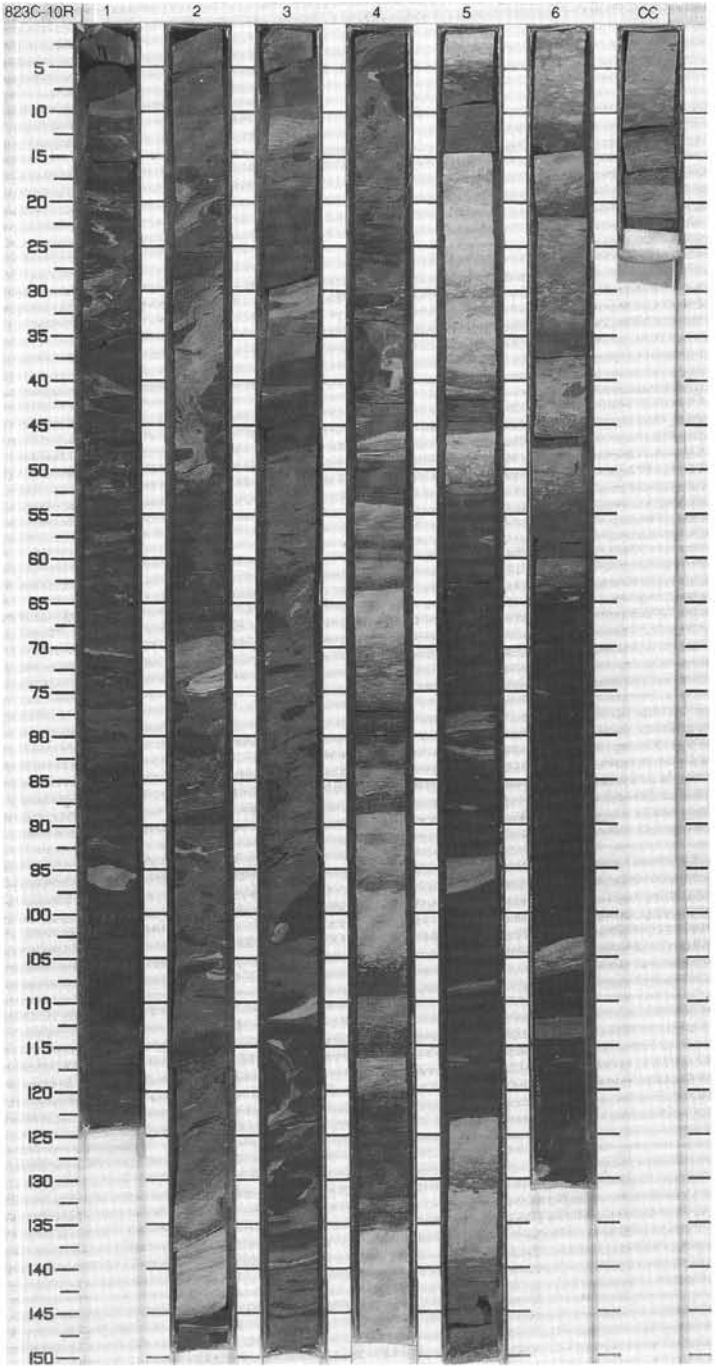
SMEAR SLIDE SUMMARY (%):

	1, 45 D	3, 18 D	6, 72 D
COMPOSITION:			
Bioclast	15	10	10
Calcite	45	---	---
Carbonate Particle	---	20	15
Clay	---	15	10
Dolomite Tr	---	---	
Foraminifers	---	5	10
Nannofossils	40	45	30
Opaques	---	---	Tr
Quartz	---	5	25

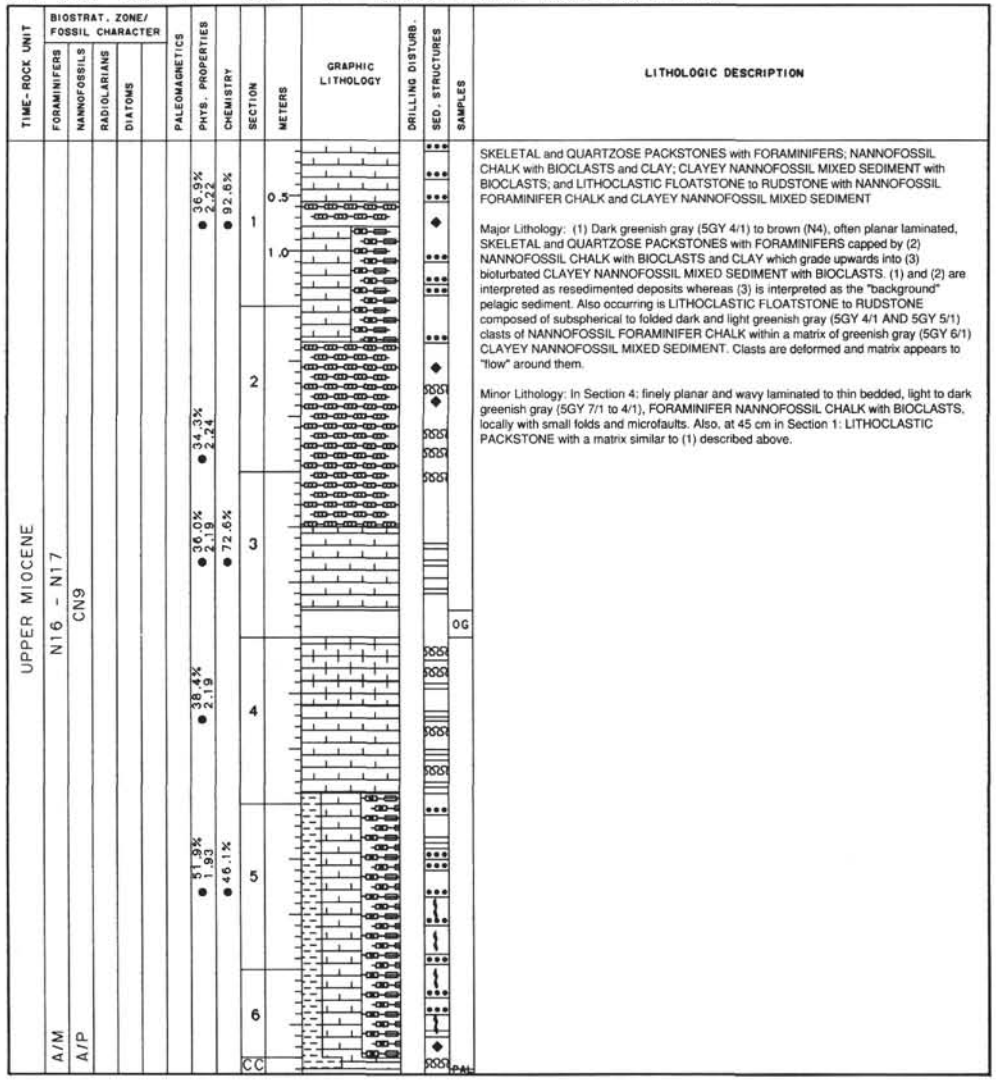


SITE 823 HOLE C CORE 10R CORED INTERVAL 870.8-880.4 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
UPPER MIOCENE	N16 - N17	CN9				43.2% 2.04	32.3%	1	0.5					LITHOCLASTIC FLOATSTONE to RUDSTONE; NANNOFOSSIL FORAMINIFER MIXED SEDIMENT; and NANNOFOSSIL CHALK with FORAMINIFERS and SKELETAL PACKSTONE to MUDSTONE.
									1.0					Major Lithology: LITHOCLASTIC FLOATSTONE to RUDSTONE; clasts and matrix are dark to light greenish gray (5GY 4/1 to 5GY 5/1), NANNOFOSSIL FORAMINIFER MIXED SEDIMENT. Deformation of clasts and associated bedding suggests soft sediment deformation. Also occurring are highly bioturbated to laminated, light to dark greenish gray (5GY 4/1 to 5GY 7/1), NANNOFOSSIL CHALK with FORAMINIFERS and dark greenish gray (5GY 4/1), graded, SKELETAL PACKSTONE to MUDSTONE.
						45.4% 2.08	19.3%	3						
					46.7% 1.99	31.0% 2.32	70.4%	2						
					49.8% 1.99	34.2% 1.92	61.1%	5						
								6						
								CC						



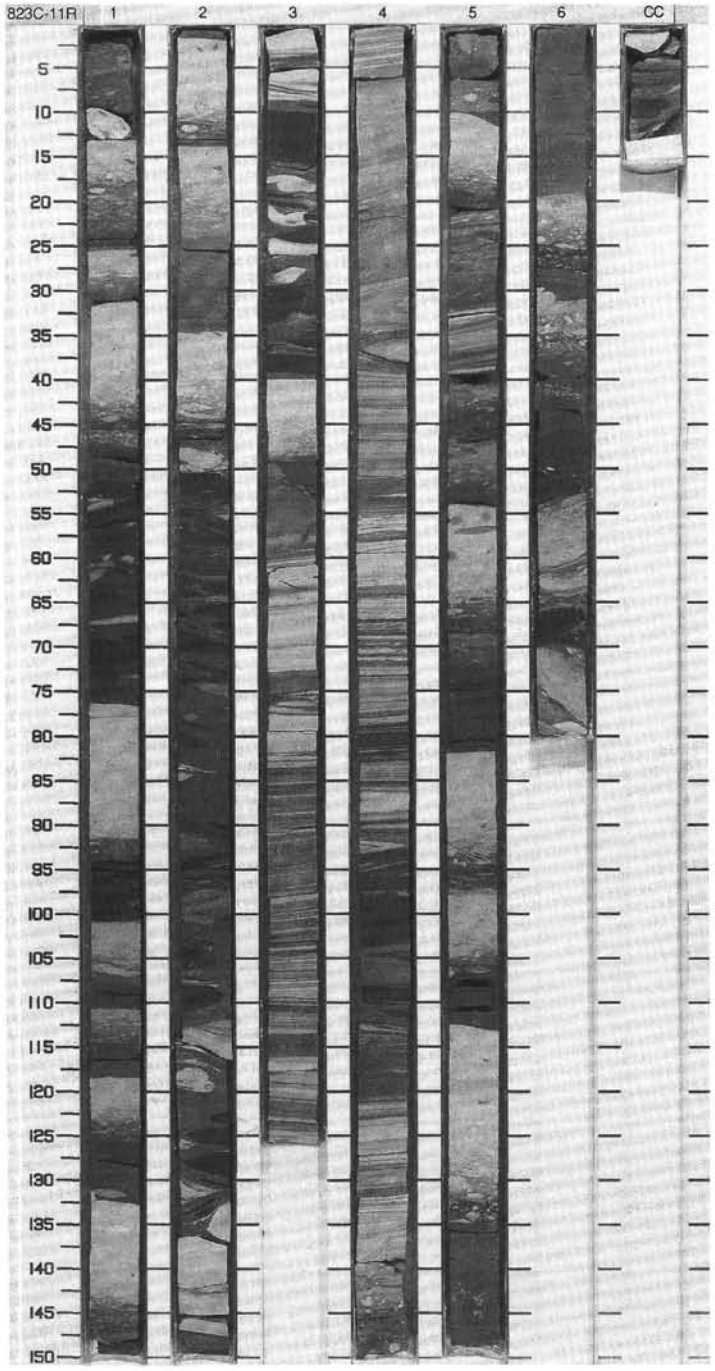
SITE 823 HOLE C CORE 11R CORED INTERVAL 880.4-890.1 mbsf



SKELETAL and QUARTZOSE PACKSTONES with FORAMINIFERS; NANNOFOSSIL CHALK with BIOCLASTS and CLAY; CLAYEY NANNOFOSSIL MIXED SEDIMENT with BIOCLASTS; and LITHOCLASTIC FLOATSTONE to RUDSTONE with NANNOFOSSIL FORAMINIFER CHALK and CLAYEY NANNOFOSSIL MIXED SEDIMENT

Major Lithology: (1) Dark greenish gray (5GY 4/1) to brown (N4), often planar laminated, SKELETAL and QUARTZOSE PACKSTONES with FORAMINIFERS capped by (2) NANNOFOSSIL CHALK with BIOCLASTS and CLAY which grade upwards into (3) bioturbated CLAYEY NANNOFOSSIL MIXED SEDIMENT with BIOCLASTS. (1) and (2) are interpreted as resedimented deposits whereas (3) is interpreted as the "background" pelagic sediment. Also occurring is LITHOCLASTIC FLOATSTONE to RUDSTONE composed of subspherical to folded dark and light greenish gray (5GY 4/1 AND 5GY 5/1) clasts of NANNOFOSSIL FORAMINIFER CHALK within a matrix of greenish gray (5GY 6/1) CLAYEY NANNOFOSSIL MIXED SEDIMENT. Clasts are deformed and matrix appears to "flow" around them.

Minor Lithology: In Section 4: finely planar and wavy laminated to thin bedded, light to dark greenish gray (5GY 7/1 to 4/1), FORAMINIFER NANNOFOSSIL CHALK with BIOCLASTS, locally with small folds and microfaults. Also, at 45 cm in Section 1: LITHOCLASTIC PACKSTONE with a matrix similar to (1) described above.



SITE 823 HOLE C CORE 12R CORED INTERVAL 890.1-899.7 mbsf

TIME-ROCK UNIT: UPPER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: N16 - N17; NANNOFOSSILS: CN9; RADIOLARIANS: A/M; DIATOMS: A/G

PALEOMAGNETICS

PHYS. PROPERTIES: 30.1% 2.30; 40.0% 2.14; 33.3% 2.29; 34.6% 2.19; 43.4% 2.15; 44.8% 2.05

CHEMISTRY: 72.1%; 94.2%; 48.6%

SECTION: CC, 6, 5, 4, 3, 2, 1

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: PAL

LITHOLOGIC DESCRIPTION

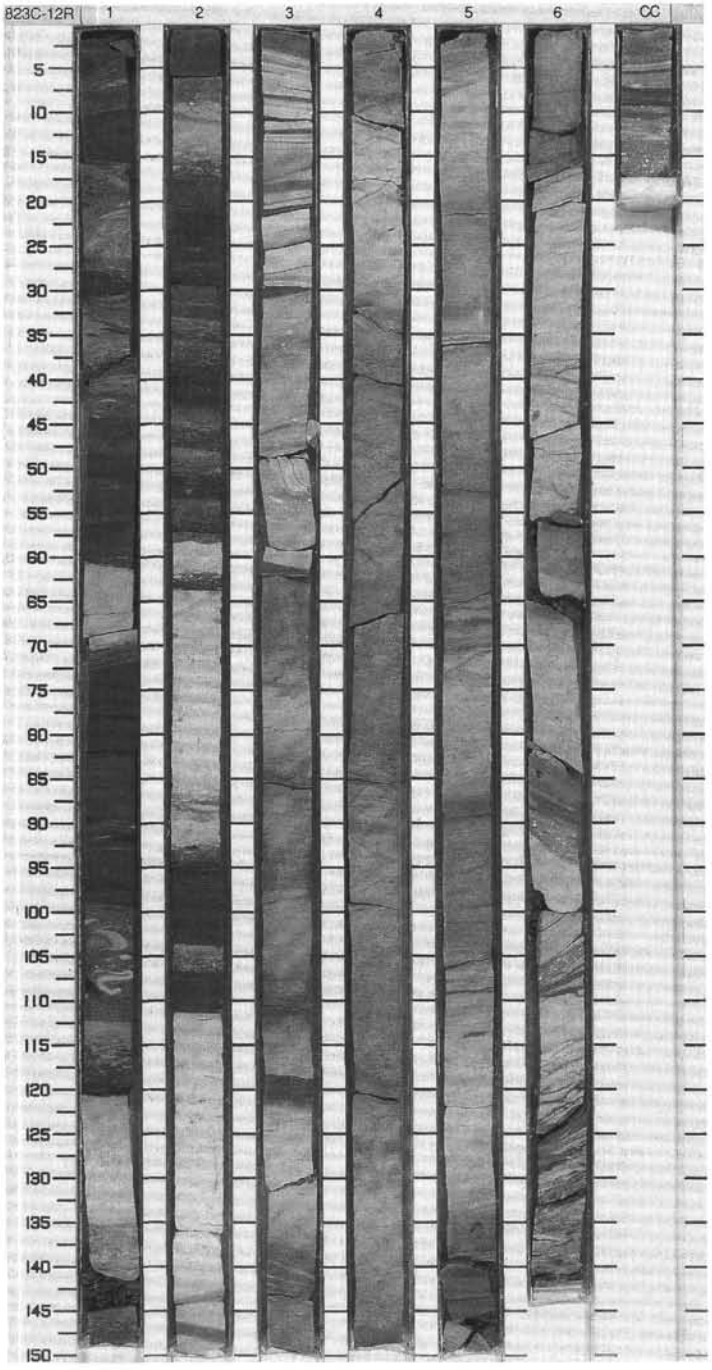
CLAYEY NANNOFOSSIL CHALK with FORAMINIFERS

Major Lithology: Dark gray to light gray, CLAYEY NANNOFOSSIL CHALK with FORAMINIFERS. It is highly contorted in Section 1 and at the base of Section 6, bioturbated and ripple laminated in Section 3, slightly bioturbated in Section 4, and BIOCLAST-bearing in Section 5. In Section 5 it forms alternating light blue gray (N7) and bluish gray (5BG 6/1), and contains burrow mottling.

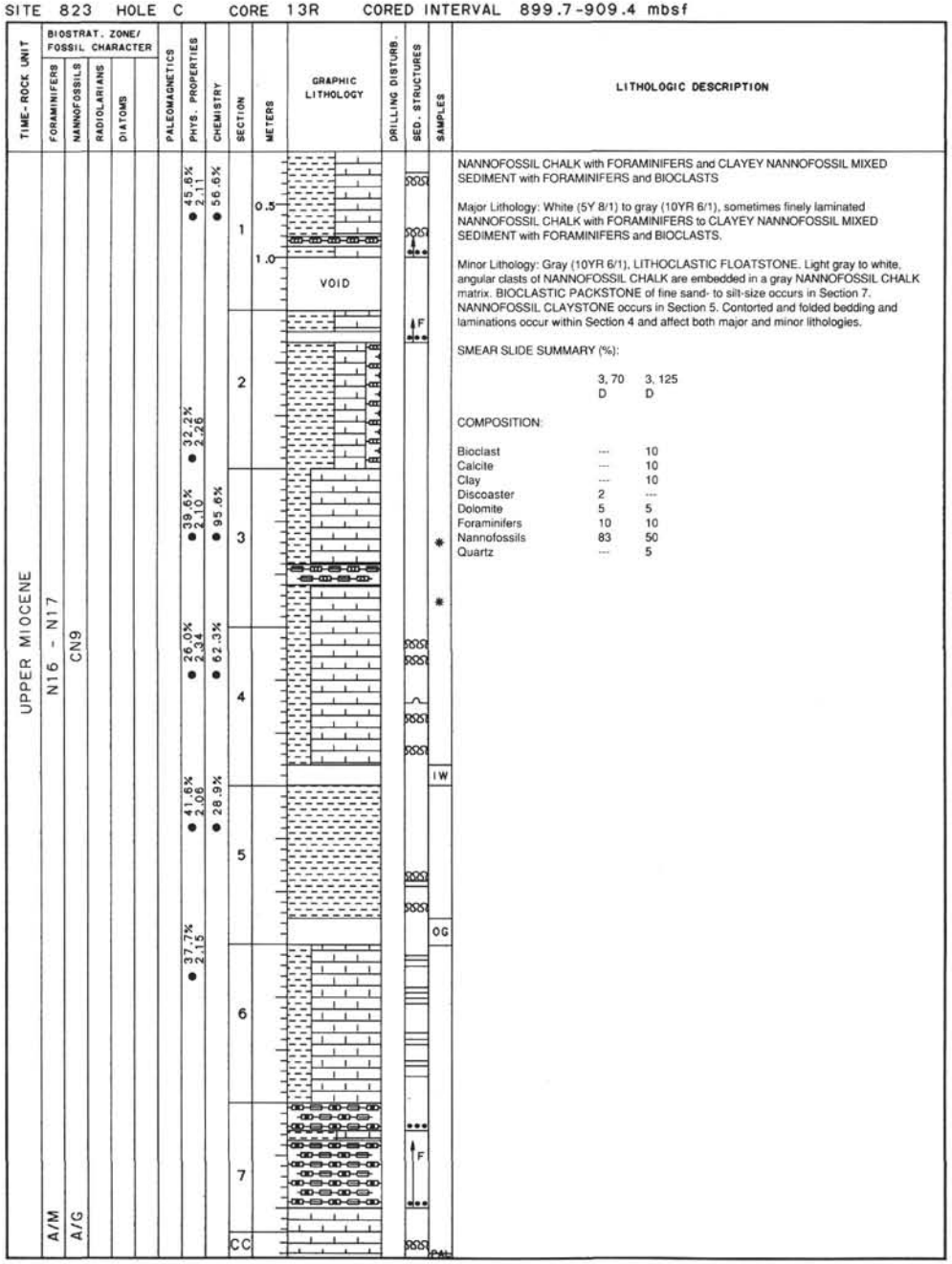
Minor Lithology: Section 2 is dominated by couplets of normally graded, dark greenish gray (5GY 4/1 to 5GY 5/1), fine to medium sand-sized, SKELETAL LITHOCLASTIC and QUARTZ-BEARING PACKSTONE, and bioturbated, dark greenish gray (5GY 4/1), CHALK WITH CLAY. CLAYEY NANNOFOSSIL MIXED SEDIMENT occurs in Section 1. LITHOCLASTIC RUDSTONE (NANNOFOSSIL CHALK clasts in a NANNOFOSSIL CHALK matrix) occurs in Section 1, 20-27 cm. A poorly sorted BIOCLASTIC PACKSTONE with platform-derived clasts including CORALLINACEANS, LARGE FORAMINIFERS, and thick MOLLUSC shells is present in the CC.

SMEAR SLIDE SUMMARY (%):

	5, 98 D
COMPOSITION:	
Bioclast	10
Carbonate Particles	20
Clay	10
Dolomite	1
Foraminifers	5
Nannofossils	45
Quartz	9



SITE 823 HOLE C CORE 13R CORED INTERVAL 899.7-909.4 mbsf



LITHOLOGIC DESCRIPTION

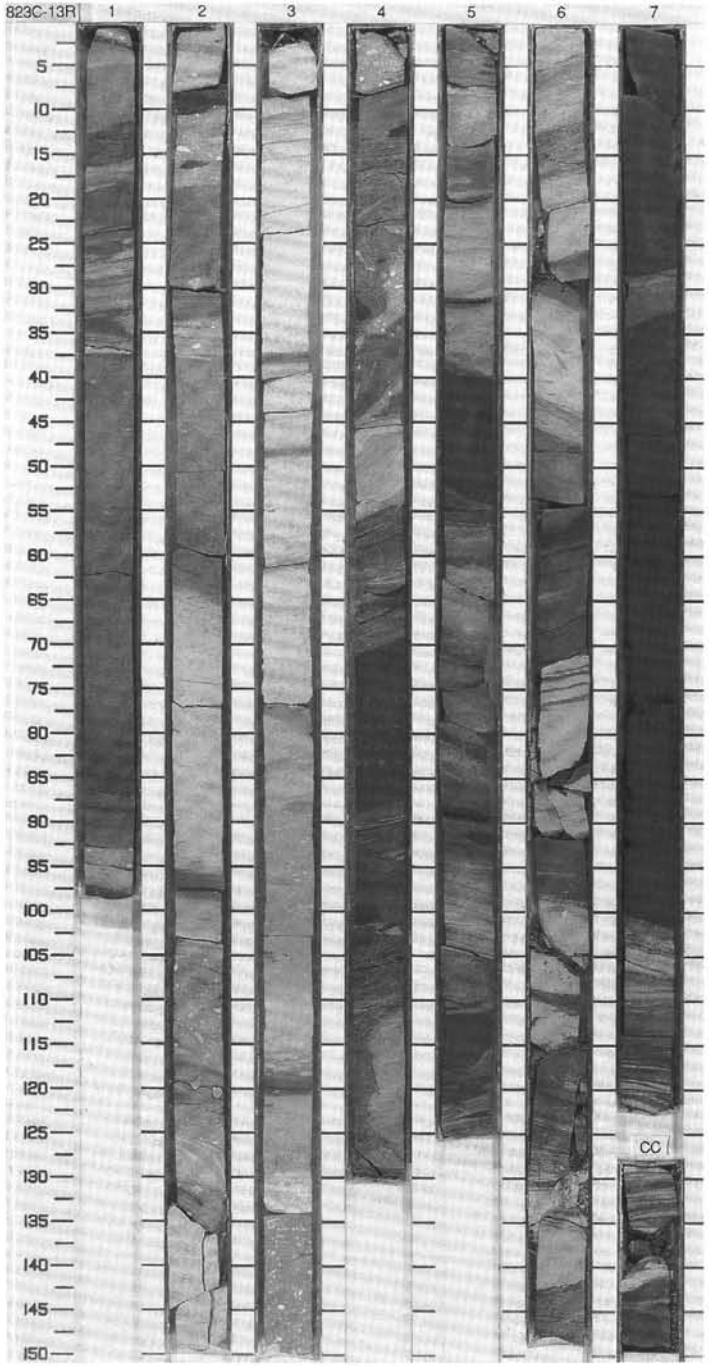
NANNOFOSSIL CHALK with FORAMINIFERS and CLAYEY NANNOFOSSIL MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS

Major Lithology: White (5Y 8/1) to gray (10YR 6/1), sometimes finely laminated NANNOFOSSIL CHALK with FORAMINIFERS to CLAYEY NANNOFOSSIL MIXED SEDIMENT with FORAMINIFERS and BIOCLASTS.

Minor Lithology: Gray (10YR 6/1), LITHOCLASTIC FLOATSTONE. Light gray to white, angular clasts of NANNOFOSSIL CHALK are embedded in a gray NANNOFOSSIL CHALK matrix. BIOCLASTIC PACKSTONE of fine sand- to silt-size occurs in Section 7. NANNOFOSSIL CLAYSTONE occurs in Section 5. Contorted and folded bedding and laminations occur within Section 4 and affect both major and minor lithologies.

SMEAR SLIDE SUMMARY (%):

	3, 70 D	3, 125 D
COMPOSITION:		
Bioclast	---	10
Calcite	---	10
Clay	---	10
Discoaster	2	---
Dolomite	5	5
Foraminifers	10	10
Nannofossils	83	50
Quartz	---	5



SITE 823 HOLE C CORE 14R CORED INTERVAL 909.4-919.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N16 - N17	CN9			A/M	A/P							

● 41.9% 2.09 ● 72.8%

● 46.8% 2.02 ● 46.4% 2.05

● 44.7% 2.05 ● 56.6%

● 42.7% 2.29 ● 80.7%

1 2 3 4 5 6 CC

0.5 1.0

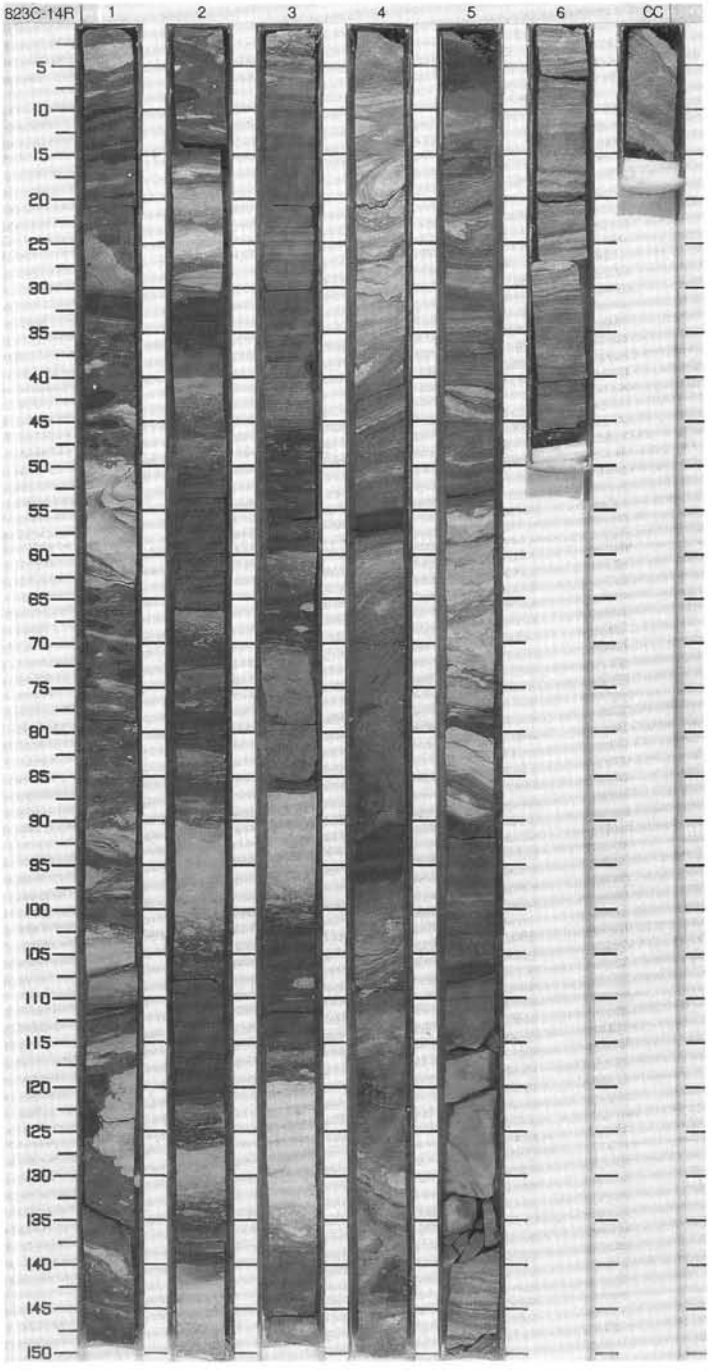
P4c

LITHOLOGIC DESCRIPTION

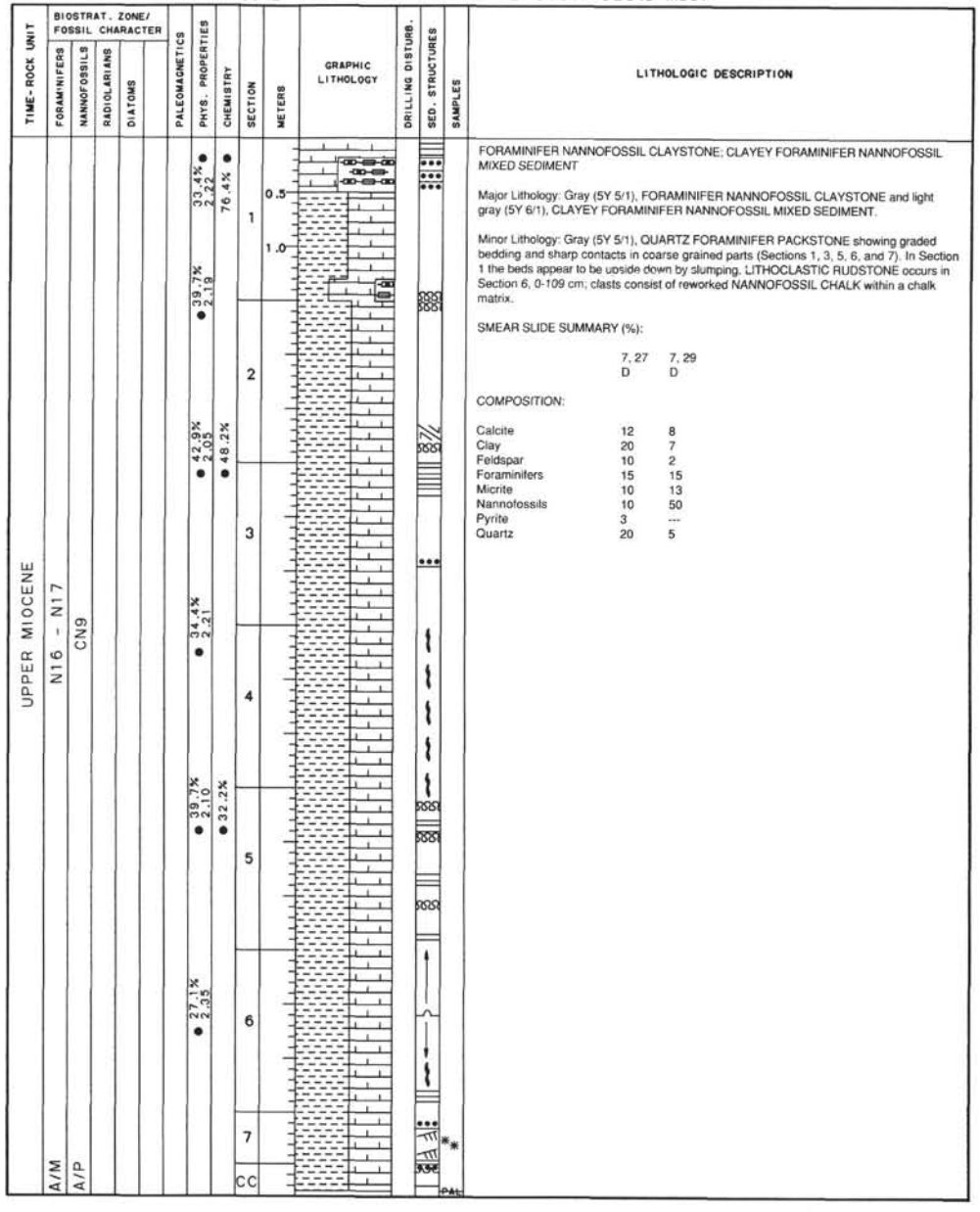
NANNOFOSSIL CHALK with FORAMINIFERS to CLAYEY NANNOFOSSIL MIXED SEDIMENT

Major Lithology: Light gray ((5Y 7/1) NANNOFOSSIL CHALK with FORAMINIFERS grading into dark gray (5Y 4/1) CLAYEY NANNOFOSSIL MIXED SEDIMENT.

Minor Lithology: Gray (5Y 6/1) BIOCLAST PACKSTONE, fining-upward from medium sand to silt. Parallel planar lamination at base, low angle cross lamination and increasing bioturbation toward the top. Gray (5Y 6/1) LITHOCLASTIC RUDSTONE with a matrix of CLAYEY NANNOFOSSIL CHALK. Clasts are NANNOFOSSIL CHALK and are typically lenticular in cross-section.



SITE 823 HOLE C CORE 15R CORED INTERVAL 919.1-928.8 mbsf



LITHOLOGIC DESCRIPTION

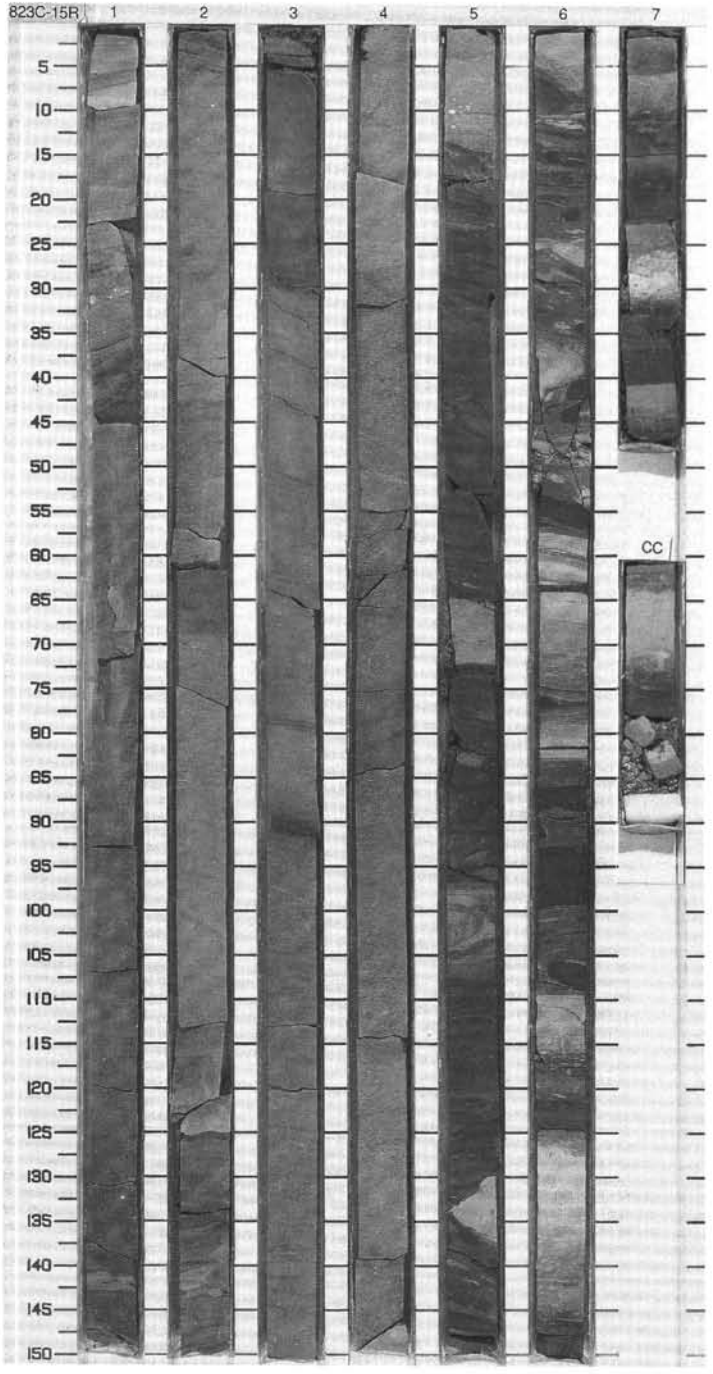
FORAMINIFER NANNOFOSSIL CLAYSTONE; CLAYEY FORAMINIFER NANNOFOSSIL *MIXED SEDIMENT*

Major Lithology: Gray (5Y 5/1), FORAMINIFER NANNOFOSSIL CLAYSTONE and light gray (5Y 6/1), CLAYEY FORAMINIFER NANNOFOSSIL MIXED SEDIMENT.

Minor Lithology: Gray (5Y 5/1), QUARTZ FORAMINIFER PACKSTONE showing graded bedding and sharp contacts in coarse grained parts (Sections 1, 3, 5, 6, and 7). In Section 1 the beds appear to be upside down by slumping. LITHOCLASTIC RUDSTONE occurs in Section 6, 0-109 cm; clasts consist of reworked NANNOFOSSIL CHALK within a chalk matrix.

SMEAR SLIDE SUMMARY (%):

	7, 27 D	7, 29 D
COMPOSITION:		
Calcite	12	8
Clay	20	7
Feldspar	10	2
Foraminifers	15	15
Micrite	10	13
Nannofossils	10	50
Pyrite	3	---
Quartz	20	5



SITE 823 HOLE C CORE 16R CORED INTERVAL 928.8-938.4 mbsf

TIME-ROCK UNIT: UPPER MIOCENE

BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS: C/M; N16 - N17. NANNOFOSSILS: A/M; CN9. RADIOLARIANS. DIATOMS.

PALEOMAGNETICS

PHYS. PROPERTIES: 31.6% 2.26; 31.5% 2.21; 37.5% 2.10; 37.5% 2.10; 34.8% 2.12

CHEMISTRY: 53.7%; 53.1%; 27.8%; 54.4%

SECTION: 1, 2, 3, 4, 5, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES

SAMPLES: OG; PAL

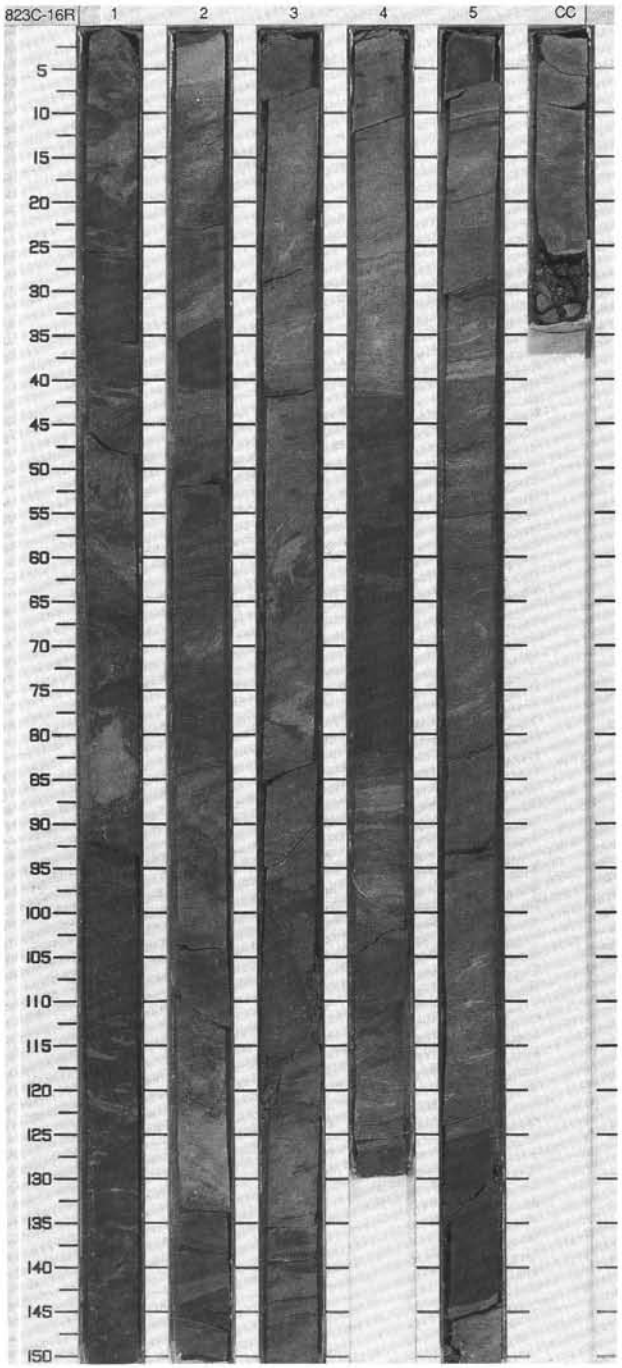
LITHOLOGIC DESCRIPTION

LITHOCLASTIC RUDSTONE

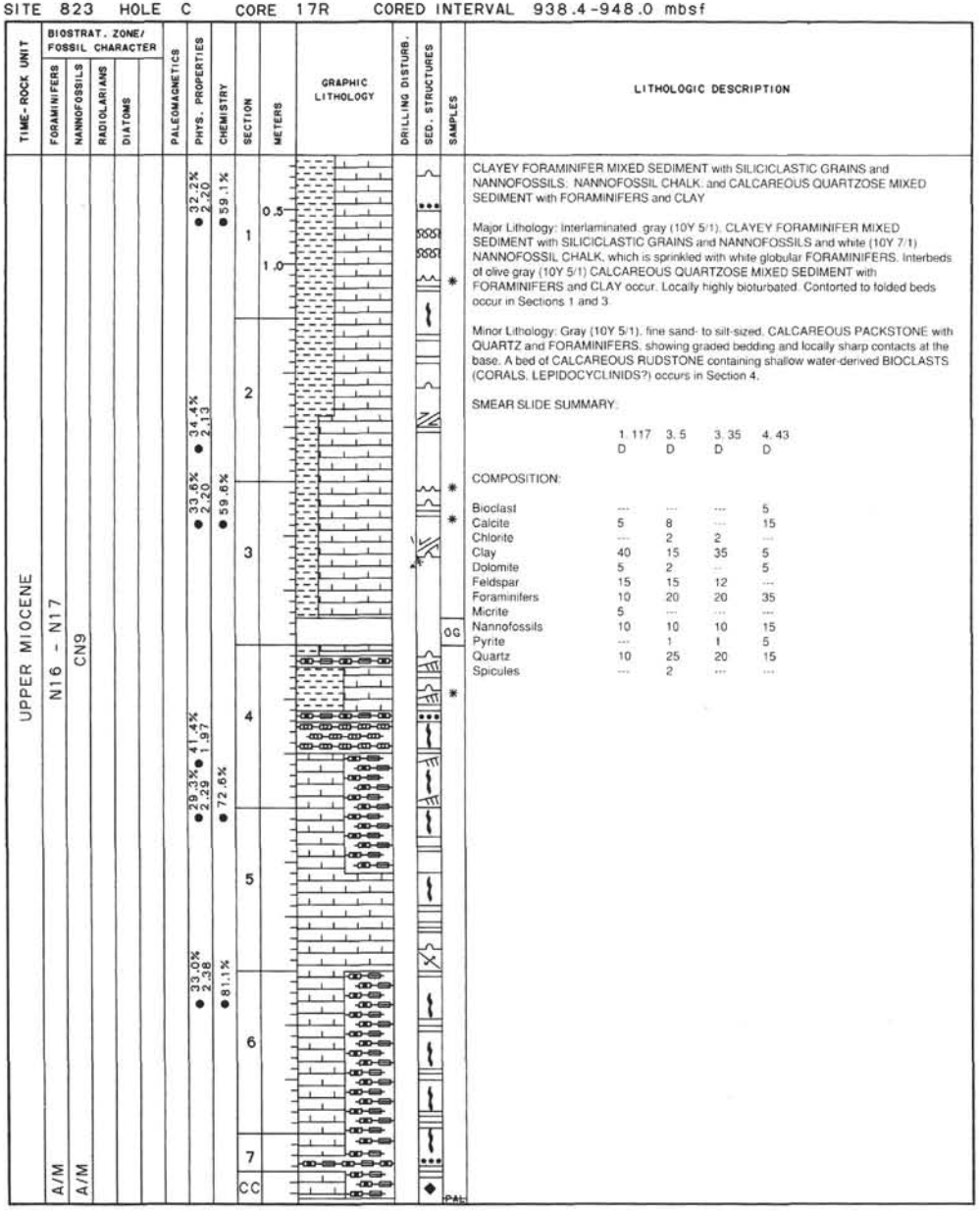
Major Lithology: Dark greenish gray (5GY 5/1 to 4/1) LITHOCLASTIC RUDSTONE composed of large (diameter: 0.5-10 cm) lithoclasts of CLAYEY SILICICLASTIC MIXED SEDIMENT with FORAMINIFERS and NANNOFOSSILS. The matrix consists of CLAYEY FORAMINIFER MIXED SEDIMENT with SILICICLASTIC GRAINS and NANNOFOSSILS; CLAYSTONE occurs locally.

SMEAR SLIDE SUMMARY (%):

	4, 35	4, 80
	D	D
COMPOSITION:		
Calcite	5	5
Chlorite	---	1
Clay	30	30
Dolomite	Tr	---
Feldspar	5	10
Foraminifers	25	20
Micrite	4	2
Nannofossils	20	15
Pyrite	1	2
Quartz	10	15



SITE 823 HOLE C CORE 17R CORED INTERVAL 938.4-948.0 mbsf



LITHOLOGIC DESCRIPTION

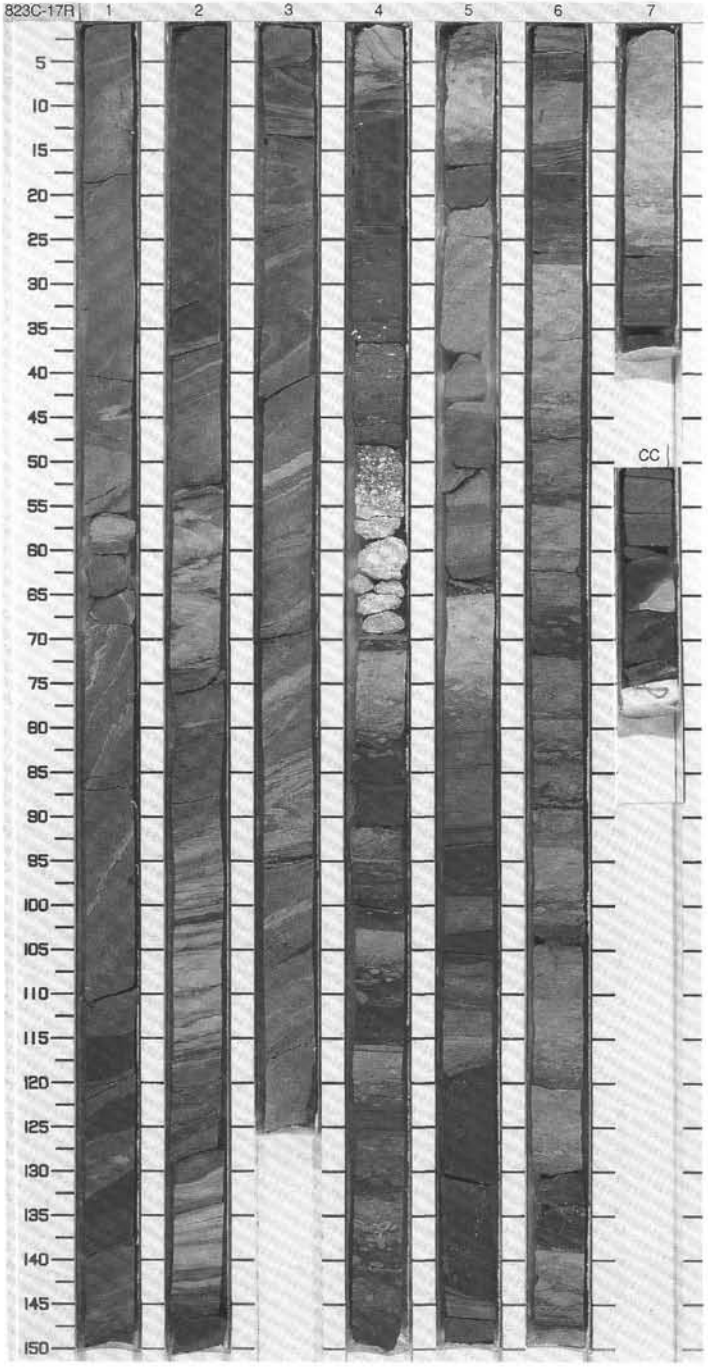
CLAYEY FORAMINIFER MIXED SEDIMENT with SILICICLASTIC GRAINS and NANNOFOSSILS; NANNOFOSSIL CHALK; and CALCAREOUS QUARTZOSE MIXED SEDIMENT with FORAMINIFERS and CLAY

Major Lithology: Interlaminated gray (10Y 5/1), CLAYEY FORAMINIFER MIXED SEDIMENT with SILICICLASTIC GRAINS and NANNOFOSSILS and white (10Y 7/1) NANNOFOSSIL CHALK, which is sprinkled with white globular FORAMINIFERS. Interbeds of olive gray (10Y 5/1) CALCAREOUS QUARTZOSE MIXED SEDIMENT with FORAMINIFERS and CLAY occur. Locally highly bioturbated. Contorted to folded beds occur in Sections 1 and 3.

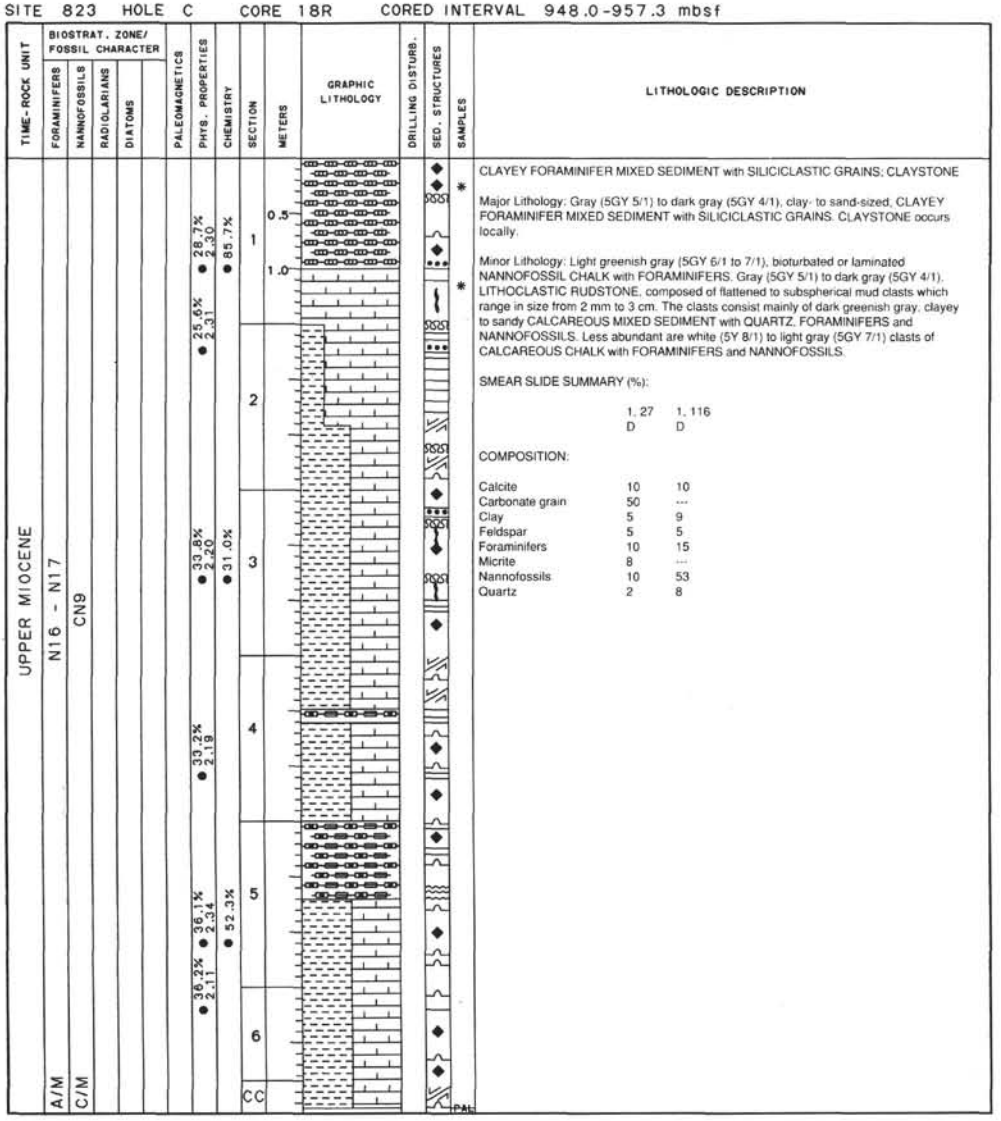
Minor Lithology: Gray (10Y 5/1), fine sand- to silt-sized, CALCAREOUS PACKSTONE with QUARTZ and FORAMINIFERS, showing graded bedding and locally sharp contacts at the base. A bed of CALCAREOUS RUDSTONE containing shallow water-derived BIOCLASTS (CORALS, LEPIDOCYCLINIDS?) occurs in Section 4.

SMEAR SLIDE SUMMARY:

	1, 117 D	3, 5 D	3, 35 D	4, 43 D
COMPOSITION:				
Bioclast	---	---	---	5
Calcite	5	8	---	15
Chlorite	---	2	2	---
Clay	40	15	35	5
Dolomite	5	2	---	5
Feldspar	15	15	12	---
Foraminifers	10	20	20	35
Micrite	5	---	---	---
Nannofossils	10	10	10	15
Pyrite	---	1	1	5
Quartz	10	25	20	15
Spicules	---	2	---	---



SITE 823 HOLE C CORE 18R CORED INTERVAL 948.0-957.3 mbsf



LITHOLOGIC DESCRIPTION

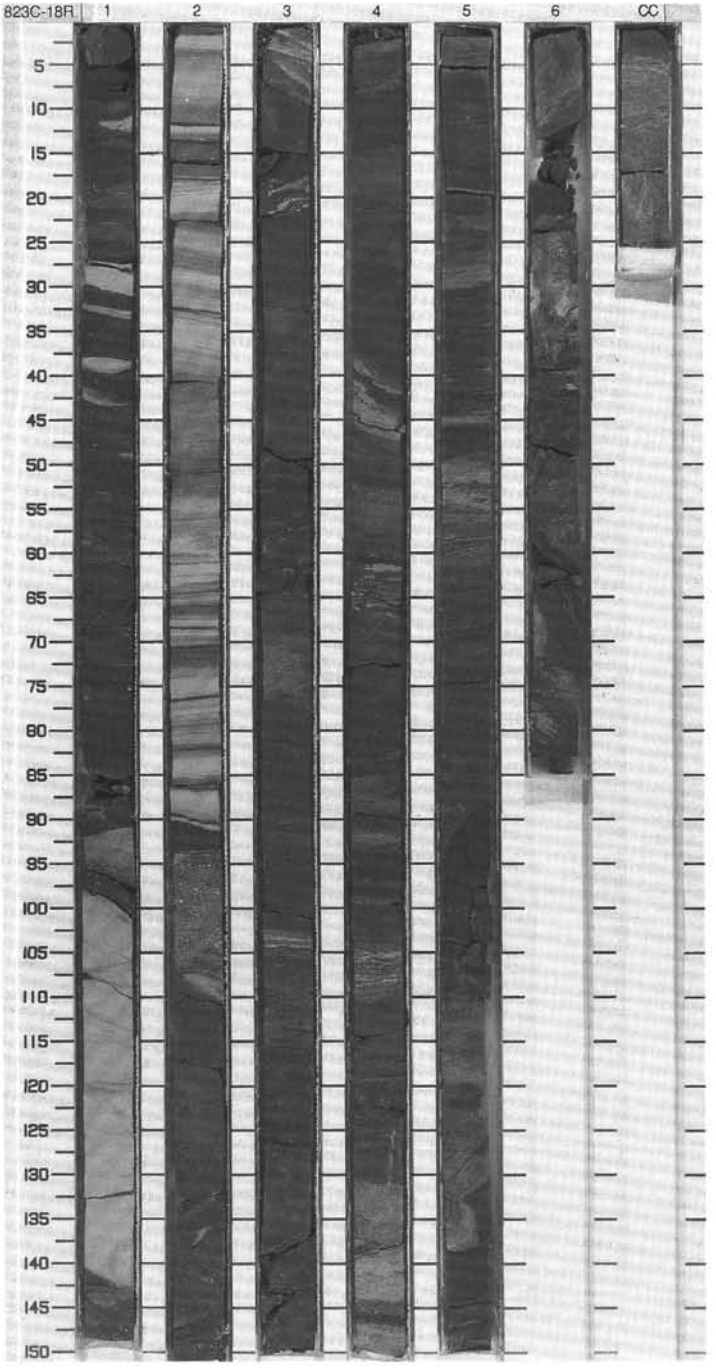
CLAYEY FORAMINIFER MIXED SEDIMENT with SILICICLASTIC GRAINS; CLAYSTONE

Major Lithology: Gray (5GY 5/1) to dark gray (5GY 4/1), clay- to sand-sized, CLAYEY FORAMINIFER MIXED SEDIMENT with SILICICLASTIC GRAINS. CLAYSTONE occurs locally.

Minor Lithology: Light greenish gray (5GY 6/1 to 7/1), bioturbated or laminated NANNOFOSSIL CHALK with FORAMINIFERS. Gray (5GY 5/1) to dark gray (5GY 4/1), LITHOCLASTIC RUDSTONE, composed of flattened to subspherical mud clasts which range in size from 2 mm to 3 cm. The clasts consist mainly of dark greenish gray, clayey to sandy CALCAREOUS MIXED SEDIMENT with QUARTZ, FORAMINIFERS and NANNOFOSSILS. Less abundant are white (5Y 8/1) to light gray (5GY 7/1) clasts of CALCAREOUS CHALK with FORAMINIFERS and NANNOFOSSILS.

SMEAR SLIDE SUMMARY (%):

	1, 27 D	1, 116 D
COMPOSITION:		
Calcite	10	10
Carbonate grain	50	---
Clay	5	9
Feldspar	5	5
Foraminifers	10	15
Micrite	8	---
Nannofossils	10	53
Quartz	2	8



SITE 823 HOLE C CORE 19R CORED INTERVAL 957.3-966.9 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
UPPER MIOCENE	N16 - N17	CN9				• 28.5% 2.34	• 71.8%	1	0.5				
									1.0				
						• 32.7% 2.23		2					
						• 32.8% 2.25	• 38.7%	3					
						• 38.2% 2.15	28.6% •	4					IW
						• 26.9% 2.35	• 51.0%	5					
	C/M	C/M						CC					PAL

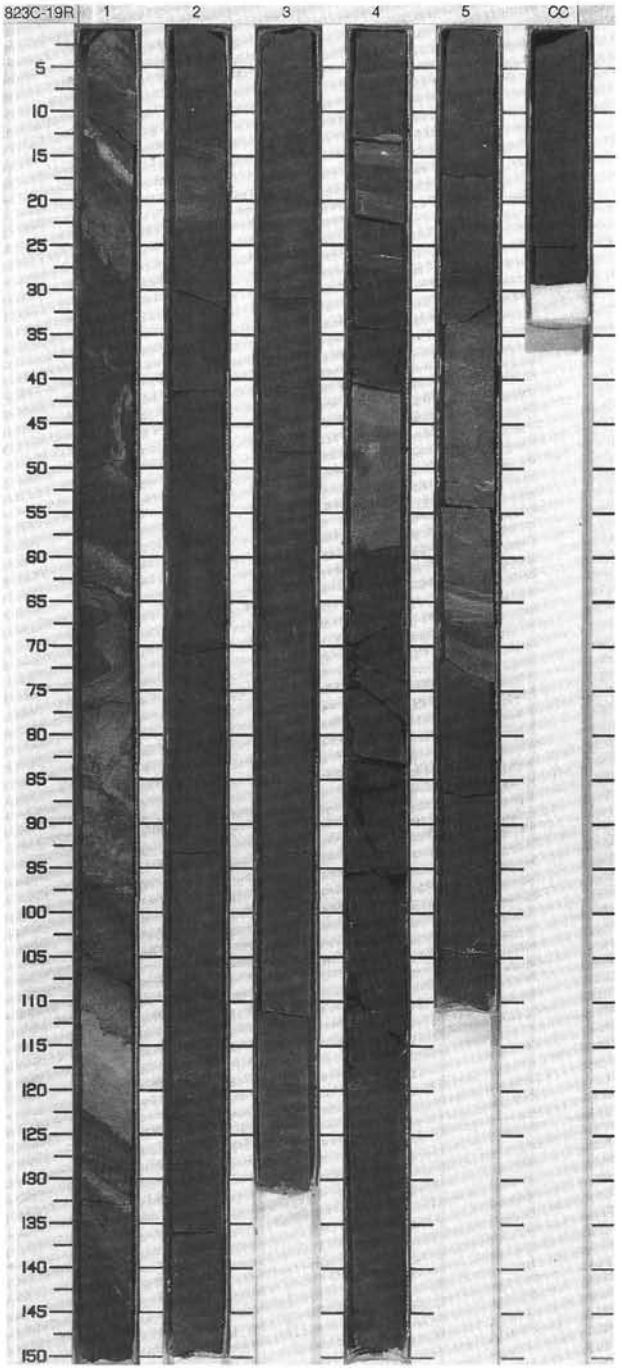
LITHOLOGIC DESCRIPTION

NANNOFOSSIL MIXED SEDIMENT with FORAMINIFER and SILICICLASTIC GRAINS; and CLAYSTONE to SANDSTONE with NANNOFOSSILS and FORAMINIFERS

Major Lithology: Olive gray (5Y 3.5/1) to dark gray (5Y 4/1), clayey to sandy, NANNOFOSSIL MIXED SEDIMENT with FORAMINIFERS and SILICICLASTIC GRAINS. CLAYSTONE to SANDSTONE with NANNOFOSSILS and FORAMINIFERS also occur. Lamination becomes more distinct downcore. A fragment of a solitary coral occurs at 53 cm in Section 5.

SMEAR SLIDE SUMMARY (%):

	3, 53 *D*
COMPOSITION:	
Calcite	10
Clay	30
Feldspar	10
Foraminifers	10
Nannofossils	30
Pyrite	Tr
Quartz	10



SITE 823 HOLE C CORE 20R CORED INTERVAL 966.9-976.6 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE UPPER MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS N16 - N17; NANNOFOSSILS CN6 - CN7; RADIOLARIANS; DIATOMS

PALEOMAGNETICS: A/M; C/M

PHYS. PROPERTIES: ● 38.2% 2.15; ● 19.8% 2.46; ● 27.6% 2.43; ● 31.9% 2.23; ● 30.8% 2.27; ● 25.5% 2.45

CHEMISTRY: ● 19.7%; ● 45.8%; ● 28.7%

SECTION: 1, 2, 3, 4, 5, 6, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: *

SAMPLES: OG; PAL

LITHOLOGIC DESCRIPTION

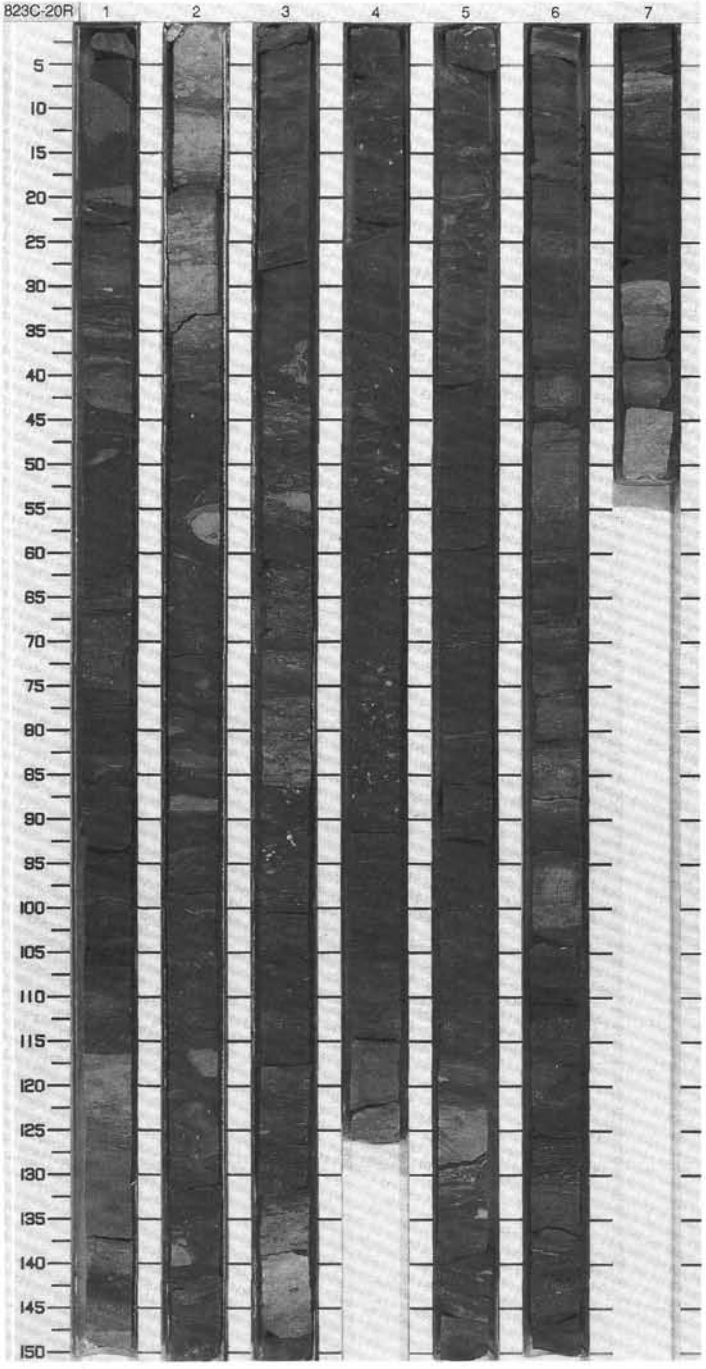
LITHOCLASTIC RUDSTONE

Major Lithology: Dark gray (5GY 4/1), LITHOCLASTIC RUDSTONE composed of well to moderately sorted, platform-derived CORALS, CORALLINACEANS, and GASTROPODS; as well as clasts of clayey to sandy MIXED SEDIMENT with FORAMINIFERS and NANNOFOSSILS.

Minor Lithology: Dark gray (5GY 4/1), clayey to sandy, MIXED SEDIMENT with FORAMINIFERS, QUARTZ, and NANNOFOSSILS. Also, light gray (5GY 6/1), bioturbated NANNOFOSSIL CHALK. Interbeds of thin (2-3 cm) medium to coarse sand-sized SANDSTONE are also present.

SMEAR SLIDE SUMMARY (%):

	3, 81 D
COMPOSITION:	
Bioclast	5
Calcite	24
Chlorite	Tr
Feldspar	15
Foraminifers	20
Micrite	5
Nannofossils	25
Pyrite	1
Quartz	5



SITE 823 HOLE C CORE 21R CORED INTERVAL 976.6-986.2 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	?	CN6 - CN7			● 29.5% 2.31	● 37.8% 2.13 ● 34.4% 2.26 ● 12.9% 2.60 ● 33.3% 2.21 ● 33.3% 2.21	● 32.6% ● 66.5% ● 41.2%	1 2 3 4 5 6 CC	0.5 1.0				PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK with CLAY and QUARTZ interbedded with CALCAREOUS MIXED SEDIMENT with FORAMINIFERS, QUARTZ, and NANNOFOSSILS; and SKELETAL PACKSTONE to CALCAREOUS MIXED SEDIMENT

Major Lithology: Dark and light greenish gray to variable gray (5GY 7/1 to 4/1; 5Y 5/1 and 5Y 4/1), NANNOFOSSIL CHALK with CLAY and QUARTZ repetitively interbedded with silty to sandy CALCAREOUS MIXED SEDIMENT with FORAMINIFERS, QUARTZ, and NANNOFOSSILS; and SKELETAL PACKSTONE, very fine to medium grained, containing BIOCLASTS, BENTHIC FORAMINIFERS, and SILICICLASTIC GRAINS. Commonly the PACKSTONE grades up into CALCAREOUS MIXED SEDIMENT. Coarser grained units display abrupt, sharp bases, commonly with scour features; normal grading; planar to low angle planar wedge cross-bedding to cross laminations; local trough cross-bedding. The CHALK intervals are typically highly bioturbated. Increased frequency of PACKSTONES and sandy MIXED SEDIMENT occurs in Sections 5 and 6.

SITE 823 HOLE C CORE 22R CORED INTERVAL 986.2-995.9 mbsf

TIME-ROCK UNIT: MIDDLE MIOCENE

BIOSTRAT. ZONE/FOSSIL CHARACTER: FORAMINIFERS: ?; NANNOFOSSILS: CN6 - CN7; RADIOLARIANS: C/M; DIATOMS:

PALEOMAGNETICS

PHYS. PROPERTIES: ● 35.2% 2.20; ● 30.2% 2.49; ● 29.0% 2.32; ● 39.4% 2.20; ● 37.9% 2.16; ● 34.5% 2.16

CHEMISTRY: ● 19.0%; ● 48.2%; ● 30.2%; ● 22.5%

SECTION: 1, 2, 3, 4, 5, 6, 7, CC

METERS: 0.5, 1.0

GRAPHIC LITHOLOGY

DRILLING DISTURB.

SED. STRUCTURES: F; F; F; F; F

SAMPLES: IW; PAL

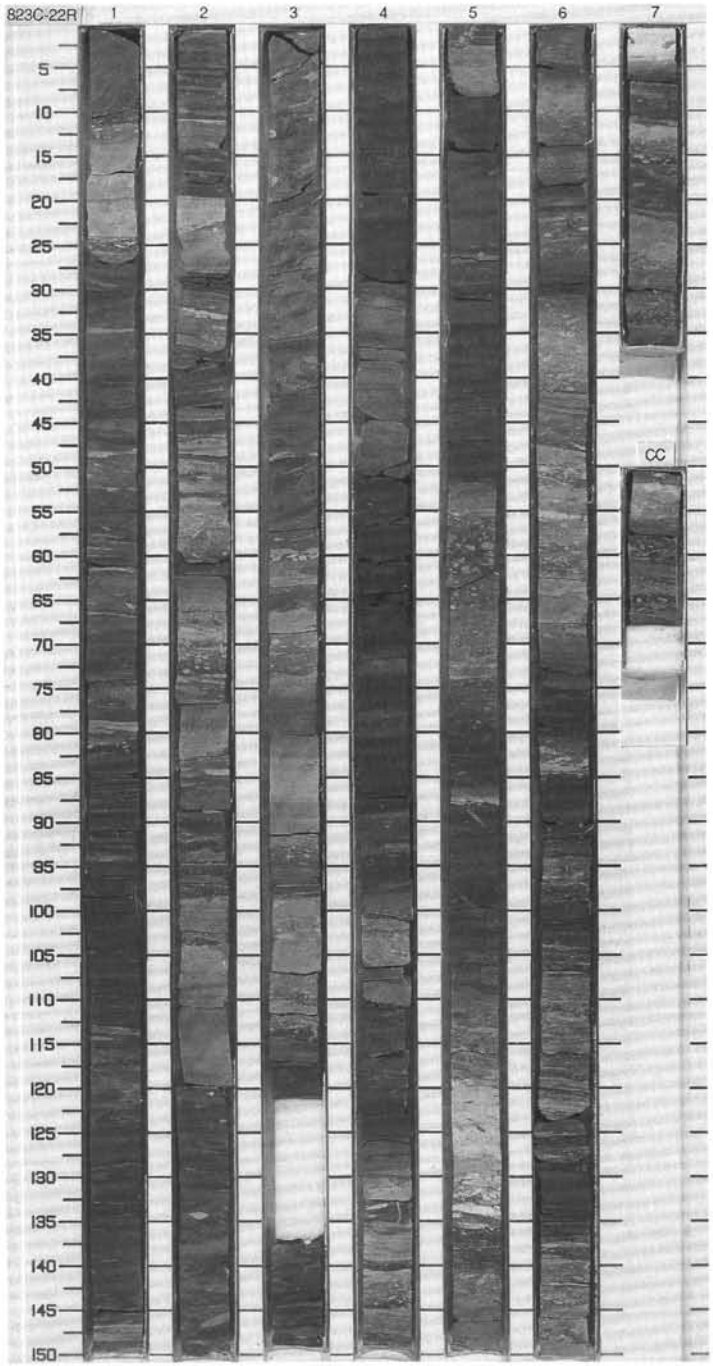
LITHOLOGIC DESCRIPTION

CLAYEY NANNOFOSSIL CHALK with FORAMINIFERS, QUARTZ and BIOCLASTS to CALCAREOUS MIXED SEDIMENT and CLAYSTONE to NANNOFOSSIL FORAMINIFER CHALK; and BIOCLASTIC PACKSTONE to GRAINSTONE

Major Lithology: Dark greenish gray (5GY 4/1), greenish gray (5GY 5/1, 6/1), well lithified, and commonly highly bioturbated CLAYEY NANNOFOSSIL CHALK with FORAMINIFERS, QUARTZ and BIOCLASTS. Clay content varies such that some intervals are CALCAREOUS MIXED SEDIMENT and CLAYSTONE. In addition, foraminifer percentages vary as well leading to local NANNOFOSSIL FORAMINIFER CHALK. Gradation between these lithologies is subtle and transitional.

The above lithologies are interbedded with silt-sized to medium and coarse sand-sized, dark greenish gray (5GY 4/1) to brown (5Y 5/1), well lithified BIOCLASTIC PACKSTONE and locally GRAINSTONE. The base of a given unit is typically sharp; normal grading is common, along with planar and wedge-planar laminations. However, where several packstone units display bioturbated textures, their upper and lower boundaries are commonly transitional.

Minor Lithology: Dark greenish gray (5GY 4/1) LITHOCLASTIC RUDSTONE; clasts are composed of the above lithologies. Contorted bedding, incorporating all the above lithologies, occurs locally but predominantly in the lower part of Section 2 and upper part of 4.



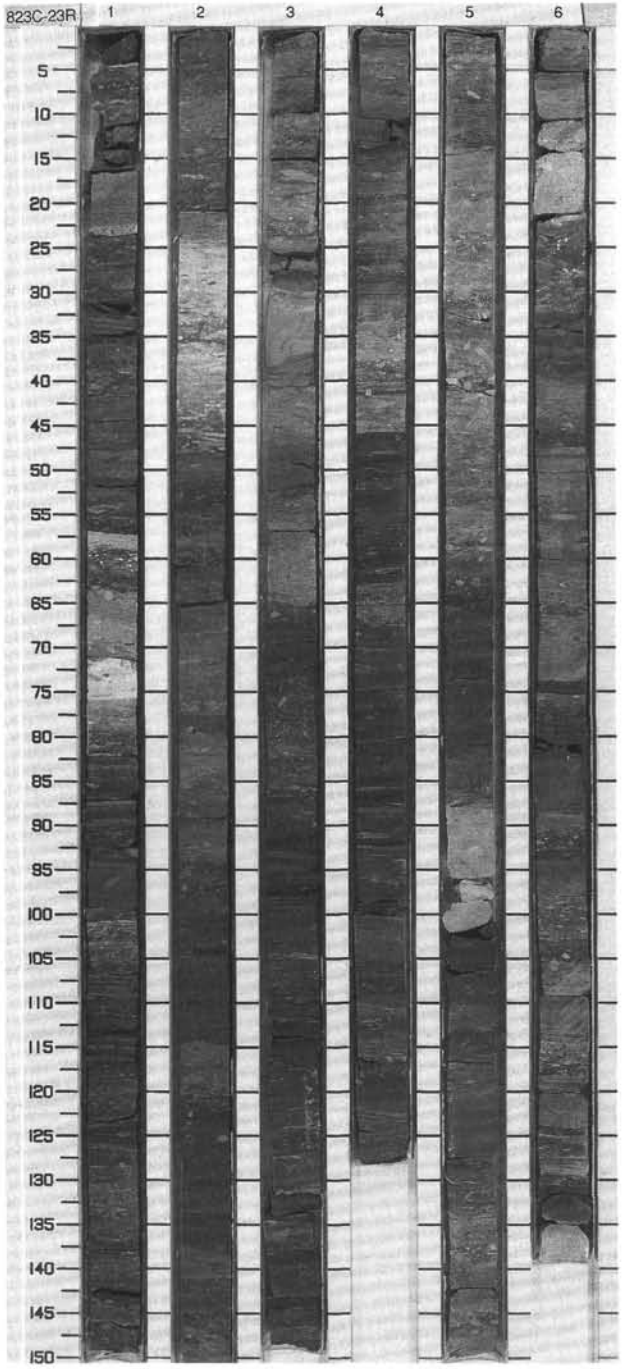
SITE 823 HOLE C CORE 23R CORED INTERVAL 995.9-1005.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	C/M N14 / R/M CN6 - CN7					● 35.3% 2.19; ● 28.9% 2.31; ● 22.6% 2.41; ● 12.0% 2.60; ● 25.8% 2.30; ● 35.7% 2.11	● 60.1%; ● 47.8%; ● 27.0%	1–6	0.5; 1.0				OG; PAL

LITHOLOGIC DESCRIPTION

NANNOFOSSIL CHALK with CLAY and QUARTZ interbedded with CALCAREOUS MIXED SEDIMENT with FORAMINIFERS, QUARTZ, and NANNOFOSSILS; and SKELETAL PACKSTONE to CALCAREOUS MIXED SEDIMENT

Major Lithology: Dark and light greenish gray to variable gray (5GY 7/1 to 4/1; 5Y 5/1 and 5Y 4/1), NANNOFOSSIL CHALK with CLAY and QUARTZ repetitively interbedded with silty to sandy CALCAREOUS MIXED SEDIMENT with FORAMINIFERS, QUARTZ, and NANNOFOSSILS; and SKELETAL PACKSTONE, very fine to medium grained, containing BIOCLASTS, BENTHIC FORAMINIFERS, and SILICICLASTIC GRAINS. Commonly the PACKSTONE grades up into CALCAREOUS MIXED SEDIMENT. Coarser grained units display abrupt, sharp bases, commonly with scour features; normal grading; planar to low angle planar wedge cross-bedding to cross laminations; local trough cross-bedding. The chalk intervals are typically highly bioturbated. Increased frequency of PACKSTONE and sandy MIXED SEDIMENT occurs in Sections 3 and 6.



SITE 823 HOLE C CORE 24R CORED INTERVAL 1005.6-1011.0 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER: FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS	PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES
MIDDLE MIOCENE	N14	CN6 - CN7				● 41.2% 2.09 ● 37.6% 2.17 ● 29.1% 2.20	● 31.7% ● 60.0%	1 2 3 4	0.5 1.0				PAL

C/M
R/P

NANNOFOSSIL CHALK with CLAY and QUARTZ interbedded with CALCAREOUS MIXED SEDIMENT with FORAMINIFERS, QUARTZ, and NANNOFOSSILS; and SKELETAL PACKSTONE to CALCAREOUS MIXED SEDIMENT

Major Lithology: Dark and light greenish gray to variable gray (5GY 7/1 to 4/1; 5Y 5/1 and 5Y 4/1), NANNOFOSSIL CHALK with CLAY and QUARTZ repetitively interbedded with silty to sandy CALCAREOUS MIXED SEDIMENT with FORAMINIFERS, QUARTZ, and NANNOFOSSILS; and SKELETAL PACKSTONE, very fine to medium grained, containing BIOCLASTS, BENTHIC FORAMINIFERS, and SILICICLASTIC GRAINS. Commonly the PACKSTONE grades up into CALCAREOUS MIXED SEDIMENT. Coarser grained units display abrupt, sharp bases, commonly with scour features; normal grading; planar to low angle planar wedge cross-bedding to cross laminations; local trough cross-bedding. The chalk intervals are typically highly bioturbated.

Minor Lithology: In Section 2, 0-100 cm, and 4, 0-80, chalk intervals comprise gray (5Y 5/1), NANNOFOSSIL FORAMINIFER CHALK.

LITHOLOGIC DESCRIPTION